APPENDICES

Appendix 1

Planning Commission Hearing Transcript

CITY OF MENLO PARK

Planning Commission

In re:

Draft Environmental Impact Report (Draft EIR) Public Hearing/Lane Partners, LLC/333 Ravenswood Avenue (includes 201 and 301 Ravenswood Avenue, and 555 and 565 Middlefield Road) (referred to as the Parkline Master Plan Project). (Staff Report #24-031-PC).
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CERTIFIED TRANSCRIPT

ENVIRONMENTAL IMPACT REPORT

REPORTER'S TRANSCRIPT OF PROCEEDINGS

AGENDA ITEM F1

MONDAY, JULY 22, 2024

Reported by AMBER ABREU-PEIXOTO

(Via ZOOM Videoconference)

Certified Shorthand Reporter No. 13546

State of California

ATTENDEES

The Planning Commission:

Jennifer Schindler- Chairperson
Andrew Ehrich - Vice Chairperson
Linh Dan Do
Misha Silin
Ross Silverstein

SUPPORT STAFF:

Corinna Sandmeier, Principal Planner

Kyle Perata, Assistant Community Development Director

Christine Begin, Planning Technician

PROJECT PRESENTERS:

Corinna Sandmeier, Principal Planner

Mark Murray, Lane Partners

Marc Pfenninger, Studios Architect

CONSULTANTS:

Jessica Viramontes, ICF
Kirsten Chapman, ICF
Ollie Zhou, Hexagon

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BE IT REMEMBERED that, pursuant to Notice of the Meeting, and on July 22, 2024, via ZOOM Videoconference, before me, AMBER ABREU-PEIXOTO, CSR 13546, State of California, there commenced a Planning Commission meeting under the provisions of the City of Menlo Park.

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MEETING AGENDA

PAGE

Presentation by Chair Schindler

Project Presenters:

Corinna Sandmeier, Principal Planner

Consultant Presentation

Jessica Viramontes, ICF

Mark Murray, Lane Partners

Marc Pfenninger, STUDIOS Architects

Public Comment

Commission Questions and Comments

--o0o--

JULY 22, 2024 7:00 p.m.

P R O C E E D I N G S

CHAIR SCHINDLER: All right. We will now move on to Item F1, the Draft Environmental Impact Report, or Draft EIR, Public Hearing, Applicant Lane Partners, LLC, as it relates to 333 Ravenswood Avenue, including 201 and 301 Ravenswood Avenue, and 555 and 565 Middlefield Road, referred to as the Parkline Master Plan Project.

This Agenda item will cover the following: Public hearing on the Draft EIR evaluating the environmental effects of the comprehensive redevelopment of the SRI campus with a mix of residential and office and research and development (R&D) uses, with limited restaurant and retail components.

The project site is zoned C-1(X) or Administrative and Professional District, Restrictive, conditional development, and governed by a Conditional Development Permit.

The proposed project would include approximately 1.1 million square feet of new office/R&D space in five buildings, retention of approximately 287,000 square feet of office/R&D space for SRI's continued operations, with no net increase in commercial square footage, and

approximately 550 residential dwelling units.

The project variant would also include an additional parcel located at 201 Ravenswood Avenue, up to 800 residential units, and then approximately 2- to 3-million-gallon below-grade emergency water reservoir and related facilities to be built and operated by the City of Menlo Park.

The Draft EIR was prepared to address potential physical environmental effects of the proposed project and project variant in the following areas:

Air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services and recreation, transportation, tribal cultural resources, utilities and service systems.

The Draft EIR finds significant and unavoidable impacts from the proposed project and project variant in the follow topic areas:

Construction noise, construction vibration, cumulative construction noise, and historical resources.

Commissioner Do.

COMMISSIONER DO: Thank you, Chair Schindler.

I just wanted to take this opportunity to

disclose that while I do live within a 500-foot radius of the project, I received advice from both the City Attorney and the Fair Political Practice Commission that due to it being a month-to-month lease, I can take part in this discussion.

I also am confident that I can do so in an un-biased and constructive manner.

Thank you.

CHAIR SCHINDLER: Thank you, Commissioner Do.

Ms. Sandmeier, I believe we're going to proceed with roughly the following structure, in terms of presentation and discussion:

I think staff is going to provide an introduction and some context for this first public hearing portion of our agenda. This item F1 is also significantly related to our next agenda item, which is a study session on this project.

So after we have staff introduction and some context, I believe that the Applicant, specifically Mr. Murray and Mr. Pfenninger are going to speak representing the Applicant. And then we will have a presentation from the EIR consultant who I believe -- there we go. Okay. Ms. Viramontes [pronouncing]. Correct pronunciation? Thank you. Apologies for not checking in on that ahead of time.

And after we have had those presentations, we will take public comment on the Draft EIR, followed by commissioner questions and comments. And then we will move into the Study Session.

Members of the public who wish to speak to the completeness and accuracy of the Draft EIR may do so during our public comment period.

So with that, Ms. Sandmeier, would you like to lead us off with an introduction and some context for this first part of our discussion of the project.

CORINNA SANDMEIER: Yes. Good evening, Chair Schindler and Commissioners. I'm Corinna Sandmeier with the Planning Division. So I'll be giving a quick overview of the Parkline Master Plan Project.

So this is the recommended meeting format. First, we have introduction by staff, and then presentation by the Applicant, and then presentation by the City's EIR consultant, then public comments on the Draft EIR, then commissioner comments and questions on the Draft EIR. And then we'll close the Draft EIR Public Hearing.

And then we'll have the Study Session, introduction by staff, commission questions, public comments on the proposed project and project variant, and commissioner comments and discussion.

So as noted, there are two separate public comment periods. So if -- we ask that people focus on either the Draft EIR, when that public comment period is up, or the study session, when that public comment period is occurring.

So this is a quick location map showing the location of the project. So it's the SRI campus that's bounded by Laurel Street, Ravenswood, Middlefield, and the Burgess right-of-way.

In general, this map shows the proximity to downtown, El Camino Real, and City Hall and Burgess Park. There's a little section along Ravenswood that is not shown as part of the project here because it's not part of the SRI campus. And that's 201 Ravenswood, and that is included in the project variant.

And so this site plan shows the proposed project. So, again, this is the SRI campus. Generally, the proposal is to add 550 residential units, to replace 1.1 million square feet of commercial, office, and R&D, and retain buildings P, S, and T. And those are shown in the kind of darker blue. And those would be retained for SRI's continued operations on the site.

And then this is the project variant that was also analyzed in the EIR. And this includes the 201 Ravenswood Avenue site. It includes up to 800 residential

units, and it includes an underground water storage, 2- to 3-million gallons, and related facilities that would be operated by the City. And this is the project that the Applicant indicates they are pursuing entitlements for.

So this is the slide on the meeting purpose. So the first item is the Environmental Impact Report. So it's an opportunity to comment on the Draft EIR. And then the second is a study session. And so that would be then comments on the proposed master plan and proposed general plan and zoning ordinance amendments to enable the master plan. And no actions will be taken tonight.

The public comment period for the Draft EIR ends on August 5th. Staff and the consultant will then review and respond to all substantive comments in a document called the Final EIR.

The Planning Commission is a recommending body on certification of the Final EIR and on most land use entitlements. The Planning Commission is the acting body on future architectural control permits for the individual buildings.

And so that concludes my presentation, and I'll turn it over to the Applicant team. Thank you.

CHAIR SCHINDLER: Thank you. I believe we have presentation from the Applicant team.

MARK MURRAY: Good evening members of the

commission and city staff --

CHAIR SCHINDLER" yeah. Just one second. Let's be sure that that's working. Try it -- want to try one more time. Thank you.

MARK MURRAY: Better?

CHAIR SCHINDLER: That's perfect. Thank you. I want to be sure folks can hear you online.

MARK MURRAY: Good evening, Members of the Commission, City Staff, and residents of Menlo Park. I'm Mark Murray, with Lane Partners. We're a Menlo Park-based real estate development firm that SRI selected several years ago to be their partner in helping them re-envision the campus they've called home for over 80 years now.

Our firm has also been in Menlo Park since it was founded over 18 years ago. So our office is half a mile from the site down Ravenswood, and I actually live half a mile down Laurel with my family. So, obviously, very familiar with this site.

But just wanted to let you know that everyone involved in the Applicant's side is -- recognizes the importance and special nature of this opportunity and we're very proud to be a part of it.

Next slide, please.

So when we were engaged by SRI, I think about

five years ago now, the primary responsibility we were given related -- was related to the research campus. This has been an incredibly venerable and productive research campus for many, many decades. But the facilities are outdated.

So the primary responsibility we were given by SRI is to re-envision that R&D campus for the future, something with new aesthetically-pleasing, sustainable buildings, something that would not only be a long-term solution to be a home for SRI, but also to create a multi-tenant environment so you could attract the best and brightest from various aspects of the research and development field to create a multi-tenant environment there.

And one of the challenges we have as you look at how we planned out the site, is SRI has to consolidate into several buildings and stay on campus. But that creates a planning challenge. It's also -- they have to stay in business throughout the process, including construction and redevelopment. So it's something that has been a challenge from the get-go and will remain a challenge.

Next slide, please.

I know it's in there, so I'll do my best to tell you what it says. So in addition to that primary

responsibility, we sat down, from the get-go, with SRI and tried to create, you know, what we wanted to be the guiding principles for this project. And while the project has changed over time, based on community feedback, those guiding principles really haven't changed much. And we've worked really hard, actually, just to kind of stay in conformance with those principles. And one of those is just opening up the site itself.

For decades, at least as long as I've been in the area, you know, it's been a fenced-off, closed-off area. Kind of acts as a big blockage in town. It's a large area of land, in a very central location, but essentially is blocked off from the community.

So one of the primary principles we looked at is opening up the site itself, physically, but then creating a new district or a new neighborhood where one of the primary features is actually community access and public access.

The other thing we wanted to do, based on what we were hearing in the community, even prior to starting the public process for Parkline itself, was the need for housing. So we wanted to create a new housing district. And, actually, in the current CDP plan, which is our most recent proposal, there's actually two housing districts, totaling 800 units.

Another goal was to create a really permeable site to really improve bike and pedestrian access, not only for people using the site, getting around the site, but because of this location and scale of this project, it really has a chance to improve bike and pedestrian access for folks getting from one side of town to the other, whether or not they are actually -- Parkline is actually their destination.

Sustainability is another major component of the project, and that's not just achieved by replacing old buildings with new. We're also replacing 100 percent of the utility infrastructure that has major impacts on things like carbon production.

And then, you know, one of the ongoing challenges, which is still a challenge today, is how do you accomplish all these things, particularly adding housing, things like that, while respecting neighborhood edges and being responsive to community concerns.

Next slide, please.

So we are now entering the fourth year of the public process of the Parkline Project. We were working with SRI for several years before that. But over the last three-plus years, we've really worked hard to both solicit a lot of community feedback. We've had, I think, 10 open houses -- in addition to public hearings, these are open

houses we had for members of the public. Had -- I think it was a thousand surveys, but that info is missing on the thing too.

But -- and we've really worked hard to try to -- try to take those desires into account, in terms of what we're producing in terms of community amenities, but also work with concerns we were hearing in terms of traffic, in terms of height and massing, and really try to make all these components work while being respectful to what we were hearing from the community.

And I would say the biggest challenge we had throughout -- there was a lot of overwhelmingly positive feedback to some of those themes we were going for: Open space, bike and pedestrian, transit, adding housing. But it was a major challenge in terms of, you know, what is the right amount of housing. We really heard kind of a constellation of opinions on -- you know, from folks that are just kind of pro-housing and less sensitive to height and massing, to folks who live nearby who really wanted to see the minimum, and a lot of folks in the middle as well, who, you know, wanted to see a big housing component but thought, you know, hundreds and hundreds of units and going to five or six stories might be too much for the neighborhood.

Next slide, please.

KYLE PERATA: So if we could maybe -- through the Chair. I'm sorry to interrupt. But I think we're seeing other slides might be also corrupted. But I think we have a different version. So we might switch sharers real quick from Christine to Corinna. If we could just take 30 seconds to do that.

MARK MURRAY: Sure.

KYLE PERATA: And while -- no problem. While we're doing that, I think I'm hearing reports from online that we're having trouble hearing you. So I don't know if it's the mic or if you move it closer. If we just maybe try to play around with that while we do this kind of quick swap of presentations for the Applicant. Maybe do a quick test.

MARK MURRAY: Sounds good.

KYLE PERATA: That's better. I think. I hope.

CHAIR SCHINDLER: That looks better.

MARK MURRAY: Yeah. That's great. One more slide forward, please.

So just to take you briefly through the evolution of the project, I think we initially started in spring of 2021. And our initial -- we did public outreach prior to that. But it was kind of an open question as to what the right amount of housing was. We knew we wanted it to be substantial. At the same time, we didn't want it to be

too much, where it was going to, you know, garner opposition or something that was out of place in the community.

So we started at 400 units, with essentially saying we wanted to speak to the community about it. We're willing to do more. We're also willing to do less. And, again, our initial submittal was 400 units. We had our first study sessions with both Commission and Council in the summer of 2022. At that point, City Council told us to study up to 600 units at a maximum. And then later that year, we made our next formal submittal, which was 550 units. So we increased it significantly, but didn't go all the way up to the maximum. Again, that was -- the direction was a study, 600 as a maximum, not direction to go to 600.

So after that next submittal, we had a series of both the scoping session and study session before Planning Commission. And I think that was actually -- ended up being spread out over three hearings, but essentially the guidance went to study up to 700 units and then ultimately up to 800 units. And that was the direction on the EIR as well.

We went away from those hearings thinking that, you know, we really had to strive to do as much housing as we could, at least as we could pull that off with doing it

in a way that would be acceptable to the community. That was a huge challenge. We looked at -- you know, I think we had only made that submittal in late 2022, and now you're seeing our most recent CDP, which was just several months ago. But in that 18-month period, I can't tell you the number of iterations we tried, to try to, you know, find that balance of how do you get to density without doing so in a way that is going to not be well-liked in the community.

And I don't think that would have been able to be accomplished without -- we have since gone into contract to acquire the Church of Christ of Scientists. That's the 201 Ravenswood address. So that's a one-acre parcel fronting on Ravenswood, near the corner of Ravenswood and Middlefield. And while that's only one acre of land, the church also has rights over adjacent SRI property.

One of those rights is having a really large parking field. I think it's 125 stalls at a minimum. But if you look at some of the early iterations of our project, you'll see there's kind of a large parking field over in the corner there, that was to be in compliance with those rights. And then they also had ingress and egress rights, which sort of went through that corner.

So by acquiring -- we haven't acquired the church, but by being in contract to acquire the church and

making that part of the Parkline plan, it really opened up more like a four- to five-acre area in that corner, which really wasn't -- we weren't able to redevelop or plan to redevelop before.

And that really allowed us to significantly spread out the housing; create a second housing district of nearly 200 units in that corner. And that really allowed us to -- that was kind of the main change that allowed us to really do what the current 800-unit plan is, which we think is the best version of 800 units, taking into account concerns we heard from the community.

Next slide, please.

So the entitlements we're seeking now are what we would call "programmatic entitlements." Those things like the General Plan amendment, rezoning, and the CDP, which we have submitted. I wanted to make the Commission aware that this project actually bifurcated architectural controls and these other approvals.

So assuming we go through this process, which is I think currently on schedule to happen this year, there will be an entire Day 2 process with the Planning Commission that is a full architectural review. That's not to say we don't value architectural feedback now. At the very least, that would help us get it right, as fast as possible, when we get to that stage. I just wanted to

make the Commission aware of that fact.

Next slide, please.

And this is the timeline for, again, these programmatic approvals we're seeking. So the EIR public comment, I think, ends in the first week of August. And then we're currently on track to come back to this Commission for a final recommendation in October, and then final City Council hearings in November or December of this year.

And I think one of the -- one of the things we're really looking to achieve tonight, hopefully from Planning Commission, is really feedback that the program we're showing, the site plan we're showing, is the right direction. We assume that going to 800 units, instead of doing less, is probably the direction from prior hearings, but please let us know. But we're really hoping to get that kind of master plan feedback. Again, there's a lot of details we worked out, EIR studies, things like that, but we're hoping to move forward with that.

We had a City Council hearing two months ago. That was something we actually requested. It was not a required hearing in the process. And that was one of the goals we had there. And I think we achieved that at that last hearing. But we'd like to know that so we can keep moving the project forward and stay on track and hopefully

get closer to bringing this to reality.

And with that, I'll turn it over to Marc Pfenniger, who is our design lead to talk more about design.

MARC PFENNINGER: Thank you, Mark. Thank you, Chair Schindler and members of the Planning Commission and city staff. I'm Marc Pfenninger. I'm a principal with STUDIOS Architecture, and we're the master architect for the project.

I just would like to start off and pick up from where Mark left off and move into the project and just talk about what is the experience of the project and how will this site change. This is the site plan that you saw earlier that shows the boundaries of the site and its location to downtown.

Next slide, please.

But I think this is actually, really, probably a more important way to look at the site. This is the way everyone experiences the site today. You can walk across the street and see this for yourself. The site is entirely fenced off from the community. It is not accessible. And the -- parts of the buildings that are on the inside, that present themselves to committee, are -- they're old. They're in need of upgrades to maintain their viable use. And, actually, when you go inside the

site, the site is -- has -- you know, a very similar experience. It's a series of research and development buildings that do need upgrades. But it's also a site that is largely full of surface parking lot today.

Next slide.

And so one of the first things that we're proposing in this project is a change of experience by providing two new residential neighborhoods at the site; the first on the right-hand side of this image is the residential neighborhood along Laurel.

And that neighborhood begins with the Burgess Classics, which is towards the right side, right adjacent to that -- consciously thinking about, how do we weave in a neighborhood that respects that scale. So a series of town homes that have an imagery of a detached housing-type.

And then the next two residential buildings, or the major residential buildings of the development, but they step up in scale. They start at four stories, which is something we committed to early. But four stories, and having articulations as a way of breaking up the mass, and also thinking about how you can use -- use that mass to create connections into the site. And then, as you get to Ravenswood, they step up even more, to four stories -- and then on the left -- up to five stories. I apologize.

And on -- the left side shows the new neighborhood of Middlefield. And this is where the 100 percent affordable site is, along with new town homes there as well and -- which we will talk about a little bit more. Right next to this is this recreation field, which is at this nexus of the R&D, the residential, and the access to the community.

Next.

In the middle of the site is where we've, you know, repurposed the -- not repurposed, but providing to replace the existing R&D with five new buildings. And rather than have them all be in a row with parking lots, we're trying to push them to the perimeter of a new central commons. And that central commons is really meant to create a new, you know, feeling of this park that is open and really trying to create, you know, a true research park where new ideas can happen.

Next slide, please.

So here's the site plan. Now one thing I wanted to point out about the site plan -- that we'll talk about as we start to zoom into sections -- is, you know -- the reasons why some of these buildings are cranked a little bit and have funny shapes is we're trying hard to save as many heritage trees as possible along the site -- whether they are heritage trees that are around the perimeter of

the site, but the site actually has quite a few old growth trees that are, you know, buried deep in the site that we want to, you know, make visible and accessible and leverage them to become new parks.

Next.

If we start to walk around the perimeter of the site, and starting with Laurel, this is where we start to see there's a bunch of heritage trees along Laurel. And the proposal is the bigger residential buildings which are on the right in this plan, they're actually pushed back from Laurel to turn those heritage trees into a linear park, which can start to line Laurel Avenue, which is the image you see on the lower left.

And then right between Residential Building 1 and the town homes is this paseo you see on the right. And you can see here how the buildings step in scale from four stories down to a smaller scale.

Next -- thank you.

And so between Residential 1 and Residential 2 is -- this starts to show how we're thinking of bringing new pedestrian connections into the site. And then what will it connect to? It's not just about connecting through the site, but providing amenities that the public can use, whether it's dog parks or areas for people to eat and picnic or playgrounds.

Next slide.

This starts to talk about the experience at the corner of Ravenswood and Laurel and how the residential building is pushed back far enough to keep the heritage trees along there and start the beginning of a linear park that connects Laurel to Middlefield along Ravenswood.

Next slide.

In the middle block, this is the part that's probably today, the most visible, about the heritage trees that you see on this site. This is where there's that great grove of trees that are, you know, old and established. And here the proposal is to -- actually, this is where you start to be able to see the R&D buildings -- but to push them back further and have this linear park become wider so that it becomes more of a parklet, more of a place for the public to occupy.

Next slide, please.

And then, finally, when we get to Middlefield, the corner of Middlefield, it's just showing how the planning of this linear park terminates at Middlefield and terminates with the residential, but also thinks about -- you know, this is where we locate the recreation area. And it's located in this area, between the residential on your right and the office R&D on your left, the parklet up above, because this is what we think will bring the most

use from all directions to it.

Next slide.

And then, if we go into the site, one of the major amenities that are in the site is this -- is this central commons. And, actually, it's a cafe, which is publicly accessible, which is on the left, but the central green, which is right in front of it, which can become a multi-use place for amenities throughout the year.

Next slide.

Then, if we zoom back, this starts to show this central commons by pushing the R&D buildings to the perimeter, that there can be a series of open spaces, a series of open greens that are connected by paths throughout it that will weave the site together.

And then throughout the central commons, throughout this common greenway is meant to be a series of amenities that are available to the public. And these range from bike repair shops -- we've talked about dog parks -- you know, places for people to play. The open lawns can be places where there can be informal -- informal recreation happening, as well as a number of other amenities.

Next.

We've thought since the beginning that it would be important to take advantage of the site, which is

currently inaccessible, with fences around it, and leverage it to weave it back into the neighborhood. And one of those ways is by bike paths.

One of the priorities of the project is to increase connectivity to the surrounding bike infrastructure, whether that's new bike lanes along Laurel, on the left side -- the ability to connect bikes through Burgess through the site to the Middlefield side of the site -- whether it's new bike paths along Ravenswood that could then bring traffic safely down to Ringwood.

And then on the inside of the site, in the blue, consciously thinking about how all of the connecting roads need to have an element, will have an element, of bike access as part of them.

Next.

And it's not just bikes. It's also pedestrians. But thinking hard about the importance of pedestrian paths and how pedestrian paths can be woven into the site to get them away from the traffic of the loop road and the other roads and really make it a safe, accessible & inviting place for everyone to come.

Next slide, please.

And maybe now just coming from center and back out. Just the visualizations of what this will look like.

This is the central green and the amenity building you start to see on your right. A mass building that could have a public cafe on the lower level. And then you start to see the iconography or the imagery of the R&D buildings, which are broken up in mass, but they're meant to have terraces that activate the central area, but push back so that it really makes a nice, open park in the center.

Next slide, please.

The entrance along Ravenswood to the campus.

Next slide.

Right at Ravenswood, at -- this is Residential 2, which is the taller of the main residential buildings; how it's pushed back and really creates a nice parklet as you get to the corner of Ravenswood.

Next slide.

And as you turn down Laurel Avenue, how this parklet starts to become a linear park that goes down Laurel. That's for pedestrians. And you can start to see along Laurel, out in Laurel, new bike lanes.

Next slide.

And, finally, the paseo that connects to the central commons to the public parks across the street, and how this paseo, not only is a way for the public to get into the site, but starts the residential buildings, four

stories, which you see on the left, and the smaller town homes on the right, which starts to connect to Burgess Classics.

And then I'd like to hand it back to Mark to talk about community benefits.

MARK MURRAY: So I just wanted to briefly give an overview of the community benefits components of the project.

Next slide, please.

So as it relates to housing again, we talked about expanding the amount of land being dedicated to housing, increasing to 800 units. To put that into some context, the 800 units, for the current RHNA cycle, which goes through 2031, I believe that's 27 percent. The 800 units would equal 27 percent of the city's RHNA obligations for this cycle. And, again, this stat is actually incorrect as of the HUDs in the most recent count, but it's 31 percent affordable, which I think is, by a pretty wide margin, the highest level of affordability proposed in Menlo Park.

Next slide, please.

And Marc did a great job with the bike safety and connections. One thing I just wanted to highlight, I'm a parent with two students at Encinal School. We live off Laurel. One thing we heard kind of over and over again,

from folks who live nearby, is Laurel is kind of one of the main arteries -- is probably the main artery from this part of town getting to Encinal School. There's a lot of kids and parents using their bikes on this artery. So there's a lot of concern about, you know, bikes mixing with cars.

We did a couple things here. One, we really limited the access from those large residential buildings. The building turning the corner on Ravenswood has no direct connectivity to Laurel.

And then for the building in the middle, the four-story building Mark mentioned, it only has ingress only from Laurel. So there's no exiting whatsoever. So we're reducing, at a minimum, you know, 75 percent of the car trips. And those two buildings will no longer be able to use Laurel.

And then we had that Class IV bike lane on both sides. So Class IV is, we actually have a physical border, and that's on both sides of the street.

So we really tried to reduce traffic, but also enhance safety with that artery, because school children from elementary, all the way to high school, were kind of the main -- we want the bike and pedestrian to serve everybody. But that's one of the groups we really thought a lot about.

And then on Ravenswood as well, we have that main paseo. So there's two existing bike lanes on each side of Ravenswood now. We'll maintain those. We're actually going to widen and buffer them a little more so they're hopefully a little more safe. But we'll also have that paseo on our property, out the street, that's really meant to focus, you know, in particular on kids going to MA or going the other direction to Hillview School.

Next slide, please.

In terms of sustainability, I mentioned before that, you know, obviously we're removing 35 old buildings, replacing them with five new ones. All of the new buildings will be fully electric, with the exception of emergency generators. But in addition to that, I think I mentioned, we're replacing site infrastructure, utility infrastructure.

And one of the existing infrastructure pieces is a cogeneration plant that's been in service for several decades, which we plan to take offline and decommission. And that cogeneration plant is responsible for about 11 percent of the carbon output in the city on an annual basis.

CHAIR SCHINDLER: Is there any adjustment we could make to that real quick? Just to...

MARK MURRAY: Does that do it?

CHAIR SCHINDLER: Seems better. Thank you.

MARK MURRAY: And the removal of that cogeneration plant is the equivalent of about 61 million miles driven by a typical gas-powered vehicle. And that's on an annual basis. So this is really a massive impact from a carbon reduction standpoint.

Next slide, please.

Tree preservation. I think Marc touched on this as well. But we really went to great lengths. At the very beginning, we categorized each and every tree on-site; not just, you know, species and age and size, but really ranking them in terms of quality, likelihood for longevity. And we really worked hard. We can go into more detail as you like, but we really went to painstaking lengths to try to preserve what we thought were the best specimens.

Next slide, please.

And as I mentioned, respecting neighborhood edges. We really worked hard with the neighbors to find that 800-unit scheme that comported with the concerns we heard from neighbors.

Next slide, please.

We can go to the next slide. I think Marc covered the open space pretty well on his walkthrough. But this is just kind of the summary of the major

community benefits. Again, 20 acres of publicly-accessible open space. It has that series of amenities Marc walked you through.

In addition to that, there's the 2.7 acre dedication to the city. That would be a -- in terms of programming that, I think the idea is that will be a Day 2 process run by Parks and Rec to program that exactly.

We're showing a sports field there now, to show that's one possibility, but also to give you a sense of scale of that area.

The 1.6-acre dedication to a third-party nonprofit for a building that will be up to 154 units, but 100 percent affordable at the low income and below levels. 2.5 miles of bike and transit, as well as a bike repair shop. 31 percent below-market rate in terms of affordability in the housing.

And then it will have that centralized amenity building, the lower level of which will be food and beverage, about 17,000 feet. So I think that's really the equivalent of, kind of, you know, three to four full-scale restaurants in that area.

Removal of cogeneration plant. Again, that massive carbon reduction.

In that sports field area as well, we have -- and this is being studied in the EIR a place to fit a 2- to

3-million-gallon potable water reservoir for emergency uses. And then we plan to make financial contributions both to the Middle Avenue Caltrain crossing, because that's a big part of our plan for bike and pedestrian transit, as well as the Railroad Quiet Zone Program.

And with that, I'm happy to answer any questions. Thank you.

CHAIR SCHINDLER: Thank you. I think we'll move on to the next component of our presentations, which is from our EIR consultant. Thank you.

Do we have the presentation for the Draft EIR? There we go. Thank you.

JESSICA VIRAMONTES: Thank you. Good evening Chair Schindler, members of the Commission, City staff, members of the public. Thank you for joining us tonight to discuss the Draft Environmental Impact Report for the Parkline Project.

Next slide.

My name is Jessica Viramontes. I'm a principal at ICF, the lead EIR consultant for this project. I'm serving as ICF's project manager. I'm joined virtually by my colleague, Kirsten Chapman. She's serving as the senior advisor for the project. I'm also joined virtually by Ollie Zhou, who's vice president and principal associate with Hexagon, the transportation consultant for

this project.

Next slide.

This presentation will clarify the purpose of tonight's hearing; provide an overview of the proposed project; describe the environmental review process, including the next steps; provide an overview of the contents of the Draft EIR; and, finally, explain how to submit comments on the Draft EIR.

Next slide.

The overall intent of tonight's hearing is to receive public comments on the analysis in the Draft EIR, specifically on the environmental impacts evaluated in the Draft EIR and the adequacy of the document pursuant to the California Environmental Quality Act, commonly referred to as CEQA.

An important reminder is that the purpose of this public hearing is not for City staff or the consultant team to respond to substantive comments or questions from the public or the commission. That process will be part of preparing the Final EIR. Next step.

This slide shows a conceptual plan for the project. The Draft EIR evaluates the potential environment impacts of both the project and project variant, which will be shown on the next slide. Corinna and the team already provided details about the proposed

project and the project variant, so I won't go into more detail here.

Next slide.

And here is the conceptual plan for the project variant.

Next slide.

As provided in the CEQA guidelines, an EIR is an informational document that is intended to inform public agency decision makers and the general public of the significant environmental impacts of a project; possible ways to avoid or substantially lessen the significant effects; and, finally, reasonable alternatives to the project. Thus, the purpose of this EIR prepared for Parkline is to provide detailed information about the environmental effects that could result from implementing the proposed project or the project variant; examine and identify methods for mitigating any adverse environmental impacts should the proposed project or the project variant be approved; and, finally, consider feasible alternatives to the proposed project and project variant, including the required "no project" alternative.

Next slide.

The environmental review process started with the release of the Notice of Preparation, commonly referred to as NOP, in late 2022. We are currently within the 45-day

Draft EIR public review period.

Next slide.

Consistent with the CEQA guidelines, the EIR provides a detailed project description; environmental setting; environmental impacts, including cumulative impacts; mitigation measures, where applicable, to reduce impacts; and a reasonable range of alternatives to the project -- excuse me. To the project and the project variant.

As previously mentioned, the EIR evaluates a variant to the proposed project. Because the variant could increase or reduce environmental impacts, the EIR analyzes the potential environmental impacts of the project variant.

Next slide.

Chapter 3 of the EIR evaluates the potential impacts of the project for the environmental topics, as required by CEQA, that are shown on this slide. And I won't list each and every one of them.

Chapter 4 evaluates the potential impacts of the project variant for these same topics. So, again, Chapter 3 for the project and Chapter 4 for the project variant.

Each CEQA topic in this list is given its own section, with each containing a description of the applicable environmental and regulatory settings, along

with an analysis of the environmental impacts.

Next slide.

As noted in Section 3.1 of the Draft EIR, it was determined that the project would have no impact related to agricultural and forestry resources, mineral resources, and wildfire.

In addition, the project site is in an infill site located in a transit-priority area, and the project proposes a mixed-use residential project. Therefore, the EIR does not consider aesthetic or vehicular parking impacts in determining the significance of impacts under CEQA.

For informational purposes only, Appendix 3.1-1 of the Draft EIR includes a discussion of the potential aesthetic changes as a result of the project and the project variant.

Next slide.

The Draft EIR identifies and classifies the environmental impacts as potentially significant, significant, less than significant, and no impact.

For each impact identified as being potentially significant, the Draft EIR provides a mitigation measure -- excuse me. Provides mitigation measures to reduce, eliminate, or avoid the adverse effect. If the mitigation measures would successfully reduce the impact to a

less-than-significant level, this is stated in the Draft EIR. If the mitigation measures would not reduce the environmental effects to a less-than-significant level, then the Draft EIR classifies the impact as significant and unavoidable.

Next slide.

These next two slides summarize the significant and unavoidable impacts and mitigation measures. Unless otherwise noted, these apply to both the proposed project and the project variant.

Significant and unavoidable impacts of the proposed project and the project variant include construction noise, ground-borne vibration, cumulative construction noise and, on the next slide, historical resources.

As shown in italics, Mitigation Measure NOI-1.3 would be implemented for the project variant only, instead of Mitigation Measure NOI-1.1.

All other mitigation measures shown here would be applicable for both the proposed project and project variant.

Although mitigation measures would be implemented to reduce the impacts shown here, these would not be able to reduce impacts to a level of less than significant.

Next slide.

This slide summarizes the significant and unavoidable impacts on historical resources. As shown in italics, Mitigation Measure CR-1.4 would be implemented for the project variant only, since the project site would include the chapel building at 201 Ravenswood.

All other mitigation measures would be applicable to both the proposed project and the project variant.

Next slide.

The Draft EIR considered a range of reasonable alternatives. These alternatives could attain most of the project's basic objectives, while avoiding or substantially lessening any of the significant environmental effects of the proposed project.

Alternatives were considered to reduce the significant and unavoidable impacts associated with construction noise and vibration, but these were determined to be infeasible. Therefore, alternatives to reduce the significant and unavoidable impacts were considered, but rejected, in the Draft EIR. Excuse me.

However, the EIR evaluates three alternatives, those shown here: Project Preservation Alternative 1, 2, and 3, in addition to the required "no project" alternative, to reduce the significant and unavoidable impacts on historical resources, as summarized in this slide.

Next slide.

Oh, sorry. One slide back. There we go.

So similar to the project alternatives, we have project variant alternatives. So based on the goal of reducing the project variant's significant impacts, while attempting to meet the basic project objectives, the City developed three alternatives to the project variant for evaluation, plus the "no project" alternatives.

It is important to note that these alternatives are similar in concept to those selected for the proposed project, as listed on the prior slide. However, the project variant alternative shown here includes slightly-altered site plans due to the differences between the proposed project and the project variant.

Next slide.

With respect to next steps in the environmental review process, the City will prepare responses to comments received on the Draft EIR during the public review period and will prepare the Final EIR. After the Final EIR is released, the decision makers will take action on the proposed project or the project variant and the EIR.

Next slide.

This slide describes how to comment on the Draft EIR. You may comment tonight virtually by rasing your

hand via Zoom or in person by submitting a speaker card. You may submit written comments addressed to Corinna at the physical address or e-mail address shown on this slide. All comments must be received by 5:30 p.m., on Monday, August 5th, 2024.

Thank you so much for your time, and we look forward to receiving your comments.

CHAIR SCHINDLER: Thank you to all who have presented on this project in support of this agenda item, our public hearing. We're going to move into public comment at this time, with regard to the Draft EIR.

Ms. Begin, could you please provide instructions and open the public comment -- actually, call for public comment. And then once we have a rough estimate of how many comment cards and hands raised online, we'll assess time allocations.

CHRISTINE BEGIN: Thank you, Chair Schindler. As a reminder, you're welcome to speak on this public comment period by raising your hand, with the hand icon on Zoom, or by pressing star 9, if calling by phone.

If you're participating in person, please fill out a comment card and bring it to me.

Currently, we have zero in-person comment cards and four hands raised online.

CHAIR SCHINDLER: Let's give it one more moment,

just to count -- for a count.

Any additional hands raised? Are we still around four?

CHRISTINE BEGIN: We have just -- fluctuating between four and five.

CHAIR SCHINDLER: Okay.

CHRISTINE BEGIN: But looks like four.

CHAIR SCHINDLER: With that count, let's proceed with the standard three-minute allocation to each speaker. So if you could please make sure they have the correct instructions and begin calling for public comment, or calling the commenters.

CHRISTINE BEGIN: Okay. Our first speaker is Bob MacDonald.

Bob, I will now allow you to speak. You do not have to provide your name and address or locality with your public comment, but you are free to do so, if you choose. I will start now, and you will have three minutes.

Go ahead. Bob, you can un-mute yourself.

CHAIR SCHINDLER: We're not able to hear you, Bob.

BOB MACDONALD: Can you hear me now?

CHAIR SCHINDLER: Yes.

Wonderful. Thank you.

BOB MACDONALD: Perfect. Hi. I'm Bob MacDonald. I am a member of the Christian Science Church at 301 Ravenswood, and our property is now part of the Parkline Project. And I am in charge of the committee at our church for the transition of our church to a better, right-sized facility in our future.

And what I'd like to do tonight is just speak in support of the Parkline Project. Coincidentally, with SRI and Lane Partners getting together with the Parkline Project, it was in the same time frame that our church congregation realized that we needed to right-size our

PC1-1

church operation for a much smaller congregation today than we've had in the past. And as we were evaluating all of our options, we determined that selling our property into the Parkline Project, after over 70 years as a partner with SRI, seemed to make the most sense.

We're very supportive of the project and what it's bringing to the community, especially the need for housing and especially affordable housing. I think the proximity -- we think the proximity, especially to Menlo Atherton High School, and other schools in the area, as well as for the City government operations is going to be a wonderful thing.

On our own, we had been looking at what we might do to help the housing situation, and becoming part of

Parkline seemed to be the best thing. We have been partnered with SRI for over 70 years because they've been providing parking for our services for all of this time.

We are also working -- we currently have a daycare that is using our facility during the week; Alpha Kids. And we're also working with them to find a new home because of how the project is going to move forward. So, anyway, it's been, you know -- we're in great support of this plan and how it's come together, and especially the housing component of that which has us very pleased.

PC1-1 cont.

That's it.

CHAIR SCHINDLER: Thank you for your comment.

CHRISTINE BEGIN: Okay. Our next speaker is Kevin Rennie.

Kevin, I will now allow you to speak. Again, you do not have to provide your name and address or locality with your public comment, but you're free to do so, if you choose.

You can please go ahead and un-mute yourself, when you're ready, and you have three minutes.

Thanks.

KEVIN RENNIE: Hi. My name is Kevin Rennie. I'm from the Willows neighborhood.

PC1-2

Chair, Commission members, staff, thank you for taking the time and organizing all of this. I just -- I

PC1-2 cont.

read, as well as I could, through the Draft, and I just wanted to list a couple of my concerns.

I read that the number of parking spaces was going to be 3,719. I'm extremely concerned with the amount of traffic that will bring in cars and buses in the surrounding neighborhoods. For example, in the Willows neighborhood, there's a cut-through, Woodland Avenue, that's used during commute times, among other roads in the Willows neighborhood. I didn't see it listed in the ERI -- EIR.

PC1-3

Additionally, cumulative proposed projects not being accounted for air quality, which are listed in all the housing elements' projected projects to come.

Additionally, there's a proposed Ringwood/Coleman bicycle/pedestrian project, which I didn't see listed in this EIR, which would -- which is proposed to close Coleman to a one-way, which would send more traffic to Bay Road and Middlefield.

PC1-4

Additionally, Willows neighborhood, during peak commute, is challenging to exit or even enter along Willow Road and more specifically, Willow and Gilbert Avenue and Middlefield, at Woodland Avenue. A lot of times I have to -- if I could bike, and it was safe -- it's not safe to bike, or I would do that. There's no complete or safe sidewalks or bike lanes along Middlefield, the complete

PC1-4 cont.

lane.

Overall, I believe this project has a larger commercial footprint. Everybody keeps talking about the housing, but it's basically a commercial project with some housing.

PC1-5

PC1-6

And I don't -- to extend the charm and beauty inherent to our Menlo Park community, I think more needs to be done. I think this is blurred with the congestion of having 7,500 -- 3.7 parking lots, I think it's going to impact congestion and property values and air quality.

PC1-7

Some of the things I would like to see completed before the project gets going, complete the Middle Avenue Caltrain bus/when-shared bike lanes all along Ravenswood, all along Middlefield, and a more direct path from Ringwood to Burgess Avenue.

PC1-8

I do see you guys have taken some time to put some bike lanes in -- or bike paths, but it's truly not enough. It looks nice, but it's not functional.

Thank you for the time. I yield back.

CHAIR SCHINDLER: Thank you for your comment.

CHRISTINE BEGIN: Thank you. Our next speaker is Pattie F.

Pattie, I will now allow you to speak. And you do not have to provide your name and address or locality with your public comment, but you're free to do so, if you

choose.

And when you're ready, you may, please, un-mute yourself. And I will start now, and you'll have three minutes to speak.

Thanks.

PATTIE FRY: Okay. Hi. Can you hear me?

CHAIR SCHINDLER: Yes. Thank you.

PATTIE FRY: Okay. I'm Pattie Fry, from central Menlo Park. And I'm a former Planning Commissioner.

I'm concerned about some of the impacts being understated in the EIR, the Draft EIR. In particular is the number of employees, potential employees. As commented before, I'm aware that current corporate and especially technology companies' worker density is about 150 square feet per worker; whereas, it looks like this assumed 250 square feet per worker, meaning that the number of employees could easily be 166 percent of the number in the document. It's understating impacts.

PC1-9

I also note that in 3.3-18 and 3.14-12, the number of employees is different by a substantial amount. I don't understand why those numbers are different. So I think there's an error in at least one place.

PC1-10

I'm also concerned that there's no mention of the current CDP employee cap that's been in place since 1975. Every time SRI let property go for other projects, the cap

PC1-11

PC1-11 cont.

was reduced; whereas, this seems to be assuming quite a number more employees and workers on-site than has been what we've all known. And that was a policy. That was part of the zoning. And so I don't -- I don't think that's been adequately addressed.

The last topic is about the impact on population and housing. I'm really concerned that, as stated on 3.14-13, there's a net decrease of 1,656 housing units in the region as a result of this project, but that's on top of a current shortage. And this implies that, you know,

PC1-12

Menlo Park's share of that problem is of the modest amount. But in reality, most cities are assuming the same thing; somebody else is going to take care of the problem that their projects create. And so even 800 housing units is not going to, you know, take care of even half of this shortage that's in addition to the current one. So I'm very much concerned about that. And that's not addressed properly, in my opinion, in this document.

Thank you.

CHAIR SCHINDLER: Thank you for your comment.

CHRISTINE BEGIN: Thank you. Our next speaker is Naomi Goodman.

Naomi, you do not have to provide your name and address or locality with your public comment, but you are free to do so, if you choose.

I will now allow you to speak, and you'll have three minutes.

Thank you.

NAOMI GOODMAN: Thank you. My name is Naomi Goodman. I'm a long-time Menlo Park resident and a retired environmental scientist.

My comment on the Draft EIR addresses the proposed use of the nonresidential buildings for bioscience R&D. Although the document states that the new buildings could accommodate the relatively low risk Biosafety Level 1 or 2 labs, it has not rejected hosting BSL-3 labs, which work with potentially lethal airborne pathogens and toxins.

PC1-13

It's expressed that there will be no hazard impacts from a BSL-3 lab because SRI and its future tenants will comply with all state, federal, and local regulations, and that any accidents that can occur will be addressed by local emergency response.

This is, frankly, blue-sky thinking. The county, the city, and the fire department have zero expertise, training, or protective equipment to respond to an airborne release of a potentially lethal biological accident.

The DER site map should also identify the location and discuss the operation of SRI's existing

bio-containment facility, which their own publicity indicates is used for research into drugs and diagnostics for agents such as HIV, Ebola, drug-resistant bacteria, anthrax, and Hepatitis C. Even if the existing facility will not be modified in this project, opening the fenced SRI campus to the public creates a new risk that the EIR must evaluate.

This is critical, considering the proximity of the project to schools, daycare centers, and the new residential areas.

PC1-13 cont.

Finally, a BSL-3 lab requires a continuous power supply to the HVAC system to ensure that airflow is drawn into the containment rooms and out through the tall rooftop stacks. The DEIR proposes 14 new emergency generators, for a total of 17. The type of generator is not stated in the EIR, but the models that were cited in the noise analysis are all diesel-fueled.

The EIR needs to state how many days of fuel will be stored on-site and also evaluate the emissions from those units, in the event of a multi-day power outage, such as the one we experienced recently.

Thank you for the opportunity to comment.

CHRISTINE BEGIN: Thank you.

CHAIR SCHINDLER: Thank you for your comment.

CHRISTINE BEGIN: Thank you.

Our next speaker is Adina Levin.

Adina, I will now allow you to speak. You have three minutes.

Thank you.

ADINA LEVIN: Hello. Good evening, Planning Commissioners. Adina Levin, Menlo Park resident. And so --

CHRISTINE BEGIN: Sorry about that. Adina, can you --

CHAIR SCHINDLER: Yes. We can't hear you.

CHRISTINE BEGIN: Sorry.

ADINA LEVIN: Okay. Aha. Here we go. Great.

So hopefully I will not need the extra 15 seconds. Adina Levin, Menlo Park resident.

And in general, I want to support the environmental benefits of this project, in terms of it being a really great location for infill, mixed-use development near the downtown area, with lots of services, and near the public transportation. Our community has been, you know, long in the habit of doing the larger developments in -- near the Bay side, with less access to services and less access to public transportation. And so, you know, there's just really good benefits of the infill development, especially with regard to our largest source of greenhouse gas emissions and particulate

PC1-14

PC1-14 cont.

pollution with, you know, driving cars.

In general, the amount of anticipated cars, with the amount of parking, and then the transportation demand management programs to help, you know, the amount of driving, in line with or less than the amount of parking available is overall not unreasonable for the location.

PC1-15

As a previous speaker mentioned, a trip cap strategy would be a potentially-reasonable thing to do for this location as well, as well as a previous speaker mentioned having good quality bike lanes in the area, which may already be included or supported. At any rate, hopefully that will be clarified because the -- you know, at the location, improving the quality of walking and biking, both for residents and people in the area, help overall reduce the amount of cars driving and pollution.

PC1-16

And the green space, including the paths, likewise, help people, you know, enjoy the area, supporting quality of life and help people get around with less driving and with the environmental benefit and -- like, the housing is really important, contributing to our housing element, supporting diversity in our community for people at a variety of different income levels.

And so, overall, in general, supportive of these different aspects of the project and its environmental benefits.

Thank you.

CHAIR SCHINDLER: Thank you for your comment.

CHRISTINE BEGIN: Thank you, Chair Schindler. At this time, I do not see any more hands raised, and I have not received any comment cards.

CHAIR SCHINDLER: Thank you. Let's just give it another 10 seconds, just in case.

Do we have any additional commenters that have raised their hands during that time?

CHRISTINE BEGIN: Thank you, Chair Schindler. I can confirm no public comments have been submitted.

CHAIR SCHINDLER: Okay. Then I will go ahead and close public comment, Item F-1, the public hearing for the Draft EIR, and we will bring the discussion back to the dais for questions, comments, and discussion.

Just as a reminder, there will be no action by the Planning Commission, and there will be no motions and no vote this evening.

So with that, do we have a commissioner who would like to begin with questions or discussion?

Commissioner Do?

COMMISSIONER DO: Thank you, Chair Schindler.

I had a question on transportation, given concerns from community members, Council, about transportation.

PC1-17

It always surprises me how a project so large can say transportation impacts will be less than significant. And I always have to remind myself, reflecting on the handful of EIRs I've looked at, that it doesn't say we are not going to see changes in our community. And I always have to remind myself that. But it is more that it's set as certain criteria, as stated in the EIR, it does not exceed the defined threshold.

So through the Chair, if I could just ask the EIR consultant, maybe just refresh my understanding -- I mean for the benefit of any community members concerned about transportation.

PC1-17 cont.

One of the ways significance is determined is the vehicle miles traveled, and that it does not exceed the threshold. And there's a chart with a number. And so the vehicles' miles traveled is the amount someone is driving -- an employee or a resident -- as it relates to them going from home to work and back.

Is that kind of the concept of VMT?

JESSICA VIRAMONTES: Generally, yes.

But I do have Ollie Zhou on the line. If we could promote him to be able to answer this question.

Thanks, Ollie.

OLLIE ZHOU: Hi, Commissioners. Ollie Zhou, from Hexagon.

Yes, you are correct. VMT for office is analyzed as the home-to-work VMT, and it is only per-employee basis.

Similarly, for residential VMT, it is analyzed for all home-related vehicle miles traveled, including home to work -- you know, going from home to shopping, et cetera.

And that is -- also analyzes -- as you mentioned, it's based on VMT per resident.

COMMISSIONER DO: Okay. No. That's helpful. It's for residents also doing errands and such.

PC1-17 cont.

And then, can you just refresh my memory, how is that threshold number determined?

OLLIE ZHOU: Yeah. So for the City of Menlo Park, the TIA guidelines require -- establish the threshold as -- I believe it is the city-wide 15 percent below the -- I'm just trying to make sure I'm saying the correct things here.

Let me -- I think it's regional duration. Right. So it is 15 percent below the regional. So San Francisco Bay Area regional average VMT per employee, and VMT per resident.

COMMISSIONER DO: All right. So there's just a very specific. And I don't -- thank you. I don't mean to get into the nitty-gritty too much. It's, just, when you

PC1-17 cont.

look at the trip-generation tables -- and currently, there's about 500 trips generated on-site -- and then you look at the projected, whether it's office or R&D, it's about 10,000. And someone can do the math and say, "That's 20 times more than what we see today. How is that not significant?"

So it's just helpful for me to remind myself how significance is determined, in the lens of the EIR.

Thank you so much.

And I had another question, if I can, through the Chair, to staff.

Ms. Sandmeier -- and I had e-mailed you earlier, and I don't know if this is an appropriate time to ask that about the EIR studies' 25 and 28 percent VMT reductions for the residents and the nonresidential portions respectively.

PC1-18

And I was just curious how that compared to comparable projects in the area, that are also close to transit.

CORINNA SANDMEIER: Yeah. Thank you for that question.

I think two projects you had brought up, when asking me about this, was the 500 ECR, the Middle Avenue, Middle Crossing Project; and then 1300 ECR, the Springline Project.

PC1-18 cont.

So both of those kind of went through the review process before, when "level of service" was still the CEQA analysis that was done instead of VMT, vehicle miles traveled.

And the C/CAG hadn't updated their TDM policy, and so there were no specific percentages for those TDM plans that were required. They did submit plans and then were required to implement those, but it wasn't based on a specific percentage.

So it's difficult to compare -- compare with project's currently going through the process.

COMMISSIONER DO: Oh, okay. Got it. Thank you.

I think that's all I have for now on the Draft EIR.

Thank you.

CHAIR SCHINDLER: Thank you, Commissioner Do.

Commissioner Silverstein.

COMMISSIONER SILVERSTEIN: I have a couple questions regarding trips.

But before I begin, just for clarification sake, is the financial impact report in scope for this discussion?

Is there anyone to either speak to that if I had related questions?

CORINNA SANDMEIER: Yeah. Thank you for that

question.

The FIA isn't part of the environmental review. So I think that would be best addressed during the study session portion of the evening.

COMMISSIONER SILVERSTEIN: Totally fine. Okay.

So following up on Commissioner Do's questions around trips, I am very confused as to how the current estimates were calculated. If you look at the existing number of trips per worker, you have less than one. And then the scenarios in the Environmental Impact Report assume more than two trips per worker. And if you compare the office, 100 percent office scenario, which would expect more employees, you have fewer estimated trips. And you compare that to the 100 percent R&D scenario, with fewer employees, you have more estimated trips.

PC1-19

And I am reading this because the calculations are seemingly done based on ITE Land Use code, "Square Footage." But that -- just by sheer fact that we're estimating more trips would come from fewer people, to me, calls into question some of the conclusions made on the potential kind of transportation impact around this.

So if anyone has any kind of clarifications on that specifically.

OLLIE ZHOU: Yes. Commissioner, I can answer that question.

So, first, I think your first question was, how were the existing trips generated. So those are based on actual count. So that was how those were conducted.

And then the -- I believe your second question was regarding how the 100 percent office came out with less trips than 100 percent R&D. And the answer is -- so on a peak hour basis, the 100 percent office had more trips than the 100 percent R&D. You know, and that's just based on, you know, data collected by ITE, which is slightly more than the R&D scenario. So on a daily basis, there's a different scenario. And this is all based on data that's collected by ITE.

And the hypothesis here is potentially that R&D workers don't always arrive and leave during the peak hour. Maybe they're more spread out throughout the day than the office workers. So that's why you're seeing that, on a daily basis, 100 percent R&D has slightly more trips generated than the 100 perfect office.

I believe there may have been another question, but -- that I'm forgetting. Please remind me.

COMMISSIONER SILIN: Could I just make a quick request?

Since there's so many documents, maybe you can refer to what document page number you're looking at?

COMMISSIONER SILVERSTEIN: Yes. So in terms of

PC1-20

the number of employees, I was looking at the Financial Impact Report that page 8 of -- page 8 of the PDF, page 5 of the actual report, shows that the "Estimated" note, total employees of the office scenario would be 4,974.

And the total employees of the R&D scenario would be 3,773. So roughly 1,200 employees difference. More employees in the office scenario.

And then, when looking at item -- or kind of item No. 3.3-21, which is page 178 of the Environmental Impact Report, that's where it goes through the trip generation estimates and includes more estimated trips for the scenario with fewer employees than the subsequent page, where it would have -- yeah. The opposite. I'm glad everyone's following along.

PC1-20 cont.

Okay. I have a couple, kind of, other comments about the -- well, one other question around the environmental impact scope as a whole, and then would love to get into some of the details of the project.

So I can't find the study today, but I did read a study that most environmental impact analyses only consider the impact that any given development would have within the boundaries of the local municipality. So this example would be Menlo Park and, specifically, this project itself, which is not unreasonable, but it doesn't consider the broader global benefit of giving more people

PC1-20 cont.

the opportunity to live in a more-dense apartment building closer to downtown, instead of, potentially, in a further-away suburb, with longer commutes.

And so my question is, when thinking about the environmental impact of this project specifically, did we at all consider the opportunity cost of not building it?

Does it include the opportunity cost of people living here, versus their next best option?

JESSICA VIRAMONTES: As part of Chapter 4 of the Draft EIR, we analyzed -- let me make sure I'm quoting the correct chapter. Excuse me.

Chapter 6 "Alternatives Analysis," we analyzed a "no project" alternative. So that evaluates what could happen if this project isn't approved and constructed. So that kind of walks down the path of evaluating and describing what would happen, if this project doesn't occur.

And an example of that would be that folks don't get to live so close to downtown Menlo Park.

COMMISSIONER SILVERSTEIN: But really quickly, as a follow up: Is the scope of that analysis still within the purview of Menlo Park environment?

Or is that thinking about where else in the world would people live, and what their emissions are, or kind of, like, what the average CO2 emissions are per capita,

PC1-20 cont.

on a relative basis between this project and kind of the no-build alternative?

JESSICA VIRAMONTES: It does do a semi-qualitative and also semi-quantitative analysis that compares the project to -- or compares the no-project alternative to the project's impacts. But I think it might be getting into a -- kind of a speculative territory, if we were to take it to that level of detail.

And I'll pause there for a second. I have my colleague Kirsten on, and she led the charge on the alternative analysis.

Did I capture everything correctly, Kirsten? Last name is "Chapman."

KIRSTEN CHAPMAN: Hi. Yes. Kirsten Chapman, ICF. Yes.

No. Jessica covered that correctly. At that level of detail that you were describing, that is speculative. And so CEQA doesn't get into that level of detail of where in the world other people could live and their emissions, and their sort of environmental impacts.

So as Jessica mentioned, yes. It's included in the no-project, but we don't get into a -- speculative assumptions for that.

COMMISSIONER SILVERSTEIN: Thank you.

Should I just keep going?

CHAIR SCHINDLER: Yeah. Go ahead.

COMMISSIONER SILVERSTEIN: So on this specific project itself, I had a quick question on canopy and trees. And I know this was something that was mentioned in a public comment to the Commission.

But just out of curiosity, do the renderings that PC1-21 are kind of presumed and published and as part of the presentations and as part of the project, does that represent the theoretical tree cover on day one?

Or would it potentially take years or decades to establish that level of beautiful trees?

And kind of, what is the expectation of canopy starting when the project is built, versus over time?

JESSICA VIRAMONTES: I'd have to ask the project applicant to take that question.

KYLE PERATA: Sure. So through the Chair, we can definitely call the applicant up.

I wonder, though, if that might be more of a study session item and just to maybe take a step back here and try to focus the Commission's comments and discussion right now on the EIR, and the adequacy or the content, the scope, the analysis in the EIR.

So if that question relates to an EIR comment, we can definitely take it now. If it is more about the architecture, the landscaping, the kind of design of the

project, I would just keep that in mind and hold it for the study session next.

COMMISSIONER SILVERSTEIN: That's fine. I'll hold that.

CHAIR SCHINDLER: Thank you.

COMMISSIONER SILVERSTEIN: Great. So, yeah.

My last comment, specifically on the EIR itself, it has been, you know, noted multiple times and is something that the applicant also has brought up, which is the -- you know, the extensive use -- and to whatever extent we can encourage biking and pedestrians, not only within the project, but also to and from it.

And I do want to echo some of the comments that were made by, I believe Mr. Rennie, talking about the currently insufficient bike lanes on Middlefield and Ravenswood and really thinking about the overall connectivity of how people could get through Menlo Park without having to kind of face some dangerous biking situations. PC1-22

And I think that -- to whatever extent we can be either confident or promote alternative transportations will certainly ameliorate a lot of the traffic concerns that people have, and the broader community concerns that anyone might have, when it comes to a larger project like this.

CHAIR SCHINDLER: Thank you, Commissioner.

Vice Chair Ehrich.

VICE CHAIR EHRICH: Thank you, Chair Schindler. Through the Chair, I have just a clarifying question for staff.

I know the schedule of approvals was presented and I'm sorry if I missed this detail, but -- so the Final EIR is scheduled to come to Council some time late this year, is my understanding.

Is that also when the Use Permit, development agreement would come to Council, or is that at a later date?

CORINNA SANDMEIER: Yes. That would all go together.

PC1-23

What would happen later would be architectural control approvals through the Planning Commission that would -- those would likely be in 2025.

VICE CHAIR EHRICH: Okay. Thank you. That's helpful.

So related to the EIR, then, for the applicant -- so thank you for the timeline that you presented in your -- in your presentation.

By my calculation, it's taken around about 18 months, maybe a little bit more, to get from the drafted Notice of Preparation to the EIR to right now. I can

imagine that the EIR was not the only thing going on for the planning process during that time.

But I guess my question is, if we didn't have to do an EIR, how much sooner could we be at Council? How much sooner -- you know, obviously speculation -- could we be at the City Council meeting that's currently scheduled for December?

PC1-23 cont.

Would we have gotten there a year earlier? Six months earlier? A full 18 months earlier?

Do we have any way of estimating that?

CORINNA SANDMEIER: Yeah. I'm not sure about that. I think -- I mean, any project of this scope would require an EIR. So I'm not sure. Yeah. There's really no examples to look at.

VICE CHAIR EHRICH: I guess -- sorry. I'm curious, from the applicant's perspective.

CORINNA SANDMEIER: Oh.

KYLE PERATA: I might step in from a staff perspective, and I think that question could probably be better handled through the study session.

It's not necessarily related to the content, the analysis in the EIR. And my goal here with that statement is to try to keep the comments focused. We are having a court reporter transcribe these comments for use in the Response to Comments' component of the Draft EIR. So just

trying to keep the dialogue this evening, during the Draft EIR public hearing, really focused on the EIR.

So the scheduling comment and the implications, I think that is a valid question that could be addressed by the applicant during the Study Session, if that's okay with Vice Chair Ehrich.

VICE CHAIR EHRICH: That's totally fine. I have no further comments on the Draft EIR.

CHAIR SCHINDLER: Thank you, Vice Chair Ehrich.

Commissioner Silin.

COMMISSIONER SILIN: Thank you. So, yeah. I have a few questions about some of the information in the EIR.

So the EIR has very specific numbers on the number of employees we expect in the two different scenarios, R&D or office. And I just wanted to double-check where those numbers come from and how -- I guess what those numbers mean. Like -- because realistically, I'm assuming it's not going to be that perfect number.

PC1-24

So which things would change if the number goes up or down, depending on, you know, market conditions or the tenants that occupy the office buildings?

JESSICA VIRAMONTES: In reference to Table 2-7 in the Project Description on page 2 -33, that's, I believe,

what shows the different employee generation rates based on the 100 percent office or the 100 percent R&D scenario that you are referring to. Those estimates are, number one, based on existing employees. So that was provided, you know, by the current tenants and owners.

And then the estimates for the possible or potential future employees were based on kind of a variety of examples and also typically-used generation rates from other prior EIRs in the city, too, for the sake of consistency.

PC1-24 cont.

And then I believe your third question was what would change if in fact the employee generation rates were higher or lower than what was disclosed in this table and analyzed in the EIR. So, for example -- and Kirsten can correct me if I miss anything, but, you know, public services and school impacts are heavily -- and population and housing. Those topics are heavily reliant on the estimates here. And those topics, including -- or those topics rely on the HNA that was prepared by Keyser Marston, that analyzes the housing needs' assessment impacts of the project.

So if this EIR did underestimate the employees under either scenario and -- it could potentially underestimate the potential impacts. And then that's not to say that the impacts would raise to a level of

"significance"; whereas, right now, they're less than significant.

So it just could kind of be moving the dial a little bit, one way or another, but not necessarily increase an impact to a different level.

COMMISSIONER SILIN: Thanks.

And so -- just so I'm clear on how this works. So today, we're sort of providing comment, and we're going to be making a decision on this project based on this EIR. And if it turns out that the reality is much different from what was assumed in the EIR, I understand that has, like, real-life impacts, but does it have impacts on, let's say, procedural things?

PC1-24 cont.

Like, does a new EIR need to be done, or do we revisit any of these things at any point, or it's just, like, we tried our best, and it ended up being different?

JESSICA VIRAMONTES: If we're talking before the project is constructed, but there might be a change to the project where, you know, more square footage is proposed that would result in more or less employees, then I defer to the City, but the decision could be made to do kind of a follow-up CEQA analysis, in terms of, like, an addendum or a subsequent EIR, or something like that, to kind of capture and evaluate those changes, if it's deemed necessary.

PC1-24 cont.

COMMISSIONER SILIN: Thanks. I was referring to, like, after. So once the project is built, it turns out a lot more employees are coming to these buildings, let's say.

JESSICA VIRAMONTES: I'll defer to the City on that question.

CHAIR SCHINDLER: And with staff, I'm wondering if that is a question that we would cover in the Study Session, where we're talking about some of the long-term time horizons associated with different outcomes, as opposed to the specific EIR. But...

KYLE PERATA: I think that's a valid question for now.

I do want to take a minute to step back to part of the introduction of the item where staff and our CEQA consultant, ICF, identified that this is an opportunity to receive comments, receive questions. We're not going to necessarily respond in detail to all comments and questions this evening.

So this would be one where we could certainly take that and respond in the Response to Comments. I think the high-level response, and I know our City Attorney is also on this evening and can kind of chime in here after I speak, but I think the high-level response to that -- you know, the analysis does include a lot of data

that are used from multiple different sources.

So in terms of, like, trips and looking at number of trips to and from the site, you're looking at source data from the Institute of Transportation Engineers. So a lot of studies use a lot of data collected.

I think, from a staff perspective, we feel very confident in that data. Otherwise, there are a number of other data sources that we -- from staff and our consultant team -- have looked at and feel confident in this evening. That being said, we'll certainly take your comment and respond to it in the Final EIR Response to Comments, as appropriate.

And I'll turn over to Mr. Biddle to identify anything else I -- to add to that.

MICHAEL BIDDLE: Good evening. I would just -- I would just add that after the -- after the project is -- or some component of it is approved and built, you don't get to go back and revisit mitigation measures and conditions, if that -- if that's the thrust of the question there. If I understood it.

COMMISSIONER SILIN: Thank you. Yeah. That's sufficient.

PC1-25

And I have a similar question on the office -- 100 percent office versus 100 percent R&D scenarios. Is that something that -- by the time we're -- or Council is

PC1-25 cont.

voting to approve this project, that will be a finalized thing, or are these just two different -- and I realize it's going to be somewhere in the middle.

But are these just two different scenarios we are considering for the purpose of analysis, and the applicant has leeway to steer it whichever way, once the project is approved?

CORINNA SANDMEIER: Yeah. I think -- let's see. I think the way it was studied in the EIR was that either would be possible, or a combination of R&D and office.

I think, certainly, if the City Council approves the Master Plan, they could condition it to, you know, have a certain percentage office or R&D. That would be possible, or it could potentially be approved, I think, with either scenario -- with the option of either scenario.

KYLE PERATA: And if I may just add to that.

So the Draft EIR analysis does look at both scenarios, as Ms. Sandmeier mentioned. What is, I think, key to note -- and Ms. Viramontes can chime in as well, but the scenario was identified on each topic area based on the more-conservative analysis so that the Draft EIR would cover the range that kind of most -- for lack of a better word -- impactful range of effects from the project.

So studying both or either office and R&D based on which land use scenario would create or potentially result in that more-greater effect, and then utilizing those mitigation measures to reduce it to less-than-significant, if feasible.

So the EIR does provide that flexibility for the applicant team to consider. And as Ms. Sandmeier mentioned, certainly from a policy standpoint, separate from the EIR, the Planning Commission and City Council could consider those land-use components as part of the entitlements for the project.

So hopefully that answers the question. And if there's anything to add, I'll look to ICF, if necessary.

JESSICA VIRAMONTES: Yes. What was said was correct, with the additional note that each and every topic section in the methods for analysis discussion, it identifies what was just referenced as the most impactful scenario and provides a brief discussion as to why, to help readers see what was evaluated and why, and the impact analysis for that topic and for that significance threshold.

COMMISSIONER SILIN: Thank you.

I had a -- so in terms of the mitigation

PC1-26

measures, one of the ones I ended up focusing on was the construction process; noise, pollution, et cetera. One of

the things I was a little bit confused about was, the noise section, you know, states that our construction hours in Menlo Park are 8:00 to 6:00. But then there are potentially concrete pours happening at 6:00 a.m. or 7:00 a.m., and then there's different requirements for those. So I was just hoping to get clarification from staff regarding what the public should expect, in terms of when there will be construction happening.

I know that there's mention that the water reservoir requires overnight construction. But just outside of, kind of, exceptions to that, what -- you know, what should we expect?

PC1-26 cont.

And also, what level of monitoring will be happening from, like, a third party, whether that be the City or a different party, to see if those noise levels are in compliance with the EIR?

CORINNA SANDMEIER: Yeah. I think there are options to get exemptions from the noise, those daytime hours, for construction, when needed. And that's why it was kind of analyzed in the EIR that way.

I believe, generally, noise complaints would be -- go through code enforcement and/or the police and be based on -- be on a complaint basis.

COMMISSIONER SILIN: So will there be a point in which the public is aware of construction happening

outside of regular hours, or is that just something that kind of happens, as the process unfolds, between the City and the builder?

KYLE PERATA: Yeah. No. Great question.

So as Ms. Sandmeier mentioned, the City does have a typical noise exemption hours. So those are the 8:00 to 6:00 hours.

With projects of this scale, it's very common for projects to have to do night work for certain activities, whether it's the concrete pours for certain foundations that need to occur during an uninterrupted duration, usually not in the heat of day, if it's during summer, stuff like that, as well as off-site improvements to limit disruptions to traffic in the area for, kind of, purposes.

PC1-26 cont.

And so the City does have a process, as mentioned, that allows for those exemptions -- or exceptions, excuse me, to be reviewed and granted. And there can sometimes be notification there. So that's something we can certainly look at as part of the project.

But the process is an evaluation by the Community Development Department for -- to make sure that the request is necessary to actually construct and can't be done during the typical hours.

But with projects of these scales, you do see work that needs to occur outside those hours. I don't

want to say frequently, but it does occur, just based on the necessity of those types of activities.

And so we do have that process. That's certainly something we can look into outside of the EIR, in terms of, you know, the entitlements for the project; how it may or may not structure that component.

COMMISSIONER SILIN: Thank you.

And I see that the mitigation measures include the assignment of a liaison, a construction liaison to -- for the public to contact with concerns. And I just wanted to clarify whether that's someone from the City or from the builder or the developer?

PC1-26 cont.

Just -- you know, my personal experience with construction happening on El Camino, for example, during Middle Plaza, was that it was often hard to figure out, you know, who's doing what. I think people were sometimes using the ACT Menlo app.

But I do think it would be nice to have a point of contact that people could go to, especially, you know, residents in that area.

CORINNA SANDMEIER: Yeah. I believe the construction liaison would be part of the applicant's construction team. It wouldn't be a City employee.

COMMISSION SILIN: Okay. Thank you.

PC1-27

And my last question is going back to the trip

counts that Commissioner Silverstein was asking. I was surprised to see that out of the approximately 10,000 trips that are being estimated, only about 22 percent of those are during peak hours.

I guess my assumption is that, you know, the majority of trips, specifically for the office or R&D portion, would be people commuting to work in the morning and going home in the afternoon, during, you know, what we would consider rush hour, peak hour.

PC1-27 cont.

And given that there are about 2,800 parking spots, presumably, that's what the developer is assuming will be needed and will be mostly full. So that seems like a lot higher number than the peak-hour trip counts that are in the report.

So I'm just wondering how that calculation was done, and what those other, you know, 80 percent of trips -- when those would be taking place in the report or the model?

OLLIE ZHOU: Yeah. Ollie, from Hexagon, again. So thank you for that comment.

So, first, the public peak hour is only just the one hour; 60 minutes in the morning. You know, presumably, like, the morning commute is a much longer period. It usually goes from 7:00 a.m. -- you know, it used to go until 10:00, or sometimes 11:00 a.m. in the

morning before, and then similarly for the afternoon.

What we are calculating is just the one hour, the peak one-hour volume used to know the entire PM commute period. Right? That is going to be way longer than -- not everybody is going to be arriving within the same one hour. You know, somebody might -- might need to be picking up or dropping off their kids during that time, and then they'll be coming way later into the office. Right?

And then this is why you see that traffic is on the roadways for -- you know, it's very heavy traffic on the roadway for more than one hour. That's because traffic is occurring during multiple hours -- not just one hour.

And all of this data is based on IT's data collection in the field in various areas. And that's the -- I guess the best information that transportation engineers have to use to be able to estimate traffic for this type of analysis.

COMMISSIONER SILIN: That makes a lot more sense. Thank you.

I don't have any more questions at this time.

Chair Schindler, thank you.

CHAIR SCHINDLER: Thank you, Commissioner.

Commissioner Silverstein.

COMMISSIONER SILVERSTEIN: You know, one last question, as part of the EIR.

So I recognize that this project doesn't meet the significance threshold regarding VMT. But it doesn't mean that there aren't any colloquial significant impacts to potential neighboring residents. One big concern that has been expressed is the increase in hyper local car traffic and specifically how it would increase the cut-through nature of nearby local residential streets. PC1-28

So my question is, what is the opportunity -- what opportunity does the Commission have to recommend any traffic flow changes or street scheme improvements to slow down cars on any cut-through streets?

Is -- I guess my question is, is that in the scope of the EIR?

Or because there's no significant VMT impact on the aggregate level, there are no mitigations needed whatsoever, even at the hyper local level?

OLLIE ZHOU: Staff, I didn't know if you wanted me to answer this.

KYLE PERATA: Yeah. Ollie, we can start with you, and then staff can follow up. If you want to start from the CEQA technical side.

OLLIE ZHOU: Sure. Okay. Yeah.

So, Commission -- so the CEQA analysis, you are

correct. It only looks at VMT -- you know, the colloquial local roadway intersection operations that is being analyzed in terms of level of service, and that is being wrapped up in the Transportation Impact Analysis report. I believe that is an attachment to the Staff Report, although it is separate from the CEQA analysis. It is something that the City of Menlo Park requires to be analyzed, and it has been analyzed.

But in terms of cut-through traffic, that is something that has been taken into account when we assigned the project traffic in the local roadway network. You know, we took into account, you know, the nature cut-through route that may be present in this area when we assigned that traffic and analyzed intersection operations accordingly.

In terms of what traffic-calming opportunities are made to be conditioned on this project, the TIA report did not identify any because it is looking at it from an intersection operation's perspective. Although I do believe we made the recommendation at the intersection of Middlefield Road and Seminary Drive to prevent traffic from being able to go from the project site onto Seminary Drive that eventually you said it's a cut-through to Willow Road. And we recommended that potentially some traffic-calming be considered along Seminary Drive.

The City also have a separate policy to implement traffic-calming through your Slow Streets Program.

So I'll stop there and see if staff wanted to add anything to that.

KYLE PERATA: Thank you.

So not necessarily EIR related, excuse me, as mentioned. So some of these questions regarding, kind of, other off-site improvements or connectivity to and from the site could definitely be a study session topic for the Commission to provide feedback on. That can certainly be something that staff and the applicant can receive this evening as feedback. And we can look into it and follow up.

But as Mr. Zhou mentioned, I think we're -- we've identified, in the City's TIA guidelines, the VMT component for the EIR and then the non-CEQA LOS component in that supporting document, the TIA, the Transportation Impact Analysis, already.

CHAIR SCHINDLER: Thank you.

Commissioner Do, did you have a follow-up question?

COMMISSIONER DO: Yes, I did.

PC1-29

And, Chair Schindler, I realize we haven't received your insights on the Draft EIR, so I will be quick. First, a comment, and then a question to the EIR

consultant.

My first comment is I feel like we would be remiss if we didn't comment on the -- the fact that the reduced-parking alternative is always rejected. And I think the rationale is that if you reduce parking too much, people will drive around the neighborhood and end up creating more problems.

PC1-29 cont.

I would like to believe that if an employee experienced that after one or two days, they would figure out a way, how to get to work without their car. But, maybe, you know, parking and other strategies, like Commissioner Silverstein is referring to, that can be studied on the study session side of things. That's my comment.

My question is -- it was brought up by a Council member and also by a public commenter this evening, just a concern that impacts aren't represented -- aren't fully represented.

Mr. Perata, you stated that the point of an EIR is to be conservative and study the worst case scenario. So I am just wondering why the office space -- I think 250 square feet per worker is used and just question why -- why and where the number comes from. The number that we've heard is 150 square feet. So I'm just curious if we're trying to figure out the worst and most-extreme

PC1-30

PC1-30 cont.

impacts, why the 250 number is used, through the Chair.

JESSICA VIRAMONTES: Kirsten, do you have any input on where that difference in square footage came from?

KIRSTEN CHAPMAN: So, let's see. Kirsten Chapman, ICF. So let's see.

So this is going back to Table 2-7 in the Project Description, which is on page 2-33. And the generation rate that we used for office is -- I'm sorry. It's 250 square feet. So that was given to us by the project sponsor. Sorry. Sorry. Sorry.

That was actually not given to us by the project sponsor. That was based on current market trends for office-generation rates. And I believe it is consistent with other office-generation rates that have been used in other EIRs in the City of Menlo Park, based on existing office trends.

So I do believe that it is consistent with projects like Willow Village and other projects in the ConnectMenlo study area.

JESSICA VIRAMONTES: Yeah. And just to add on to what Kirsten said, footnote B in the table that Kirsten cited -- while generation rates provided by the sponsor for Life Science uses are lower, at 450 square feet per employee, the EIR went the conservative route and assumed

350 square feet for current employee for R&D uses.

So we did try to take a more conservative approach.

COMMISSIONER DO: Okay. Thank you. Both of you, thank you.

CHAIR SCHINDLER: Thank you, Commissioner Do.

So I, myself, do not have any significant additions or corrections that I would like to nominate to be included in the next iteration of the EIR.

I did want to take the opportunity to support and amplify some things that other commissioners and staff have also alluded to here. You know, this EIR, like others, may not be looking at impact the way that members of our community does, or they're for their fit for themselves, for their families, or for their city. But we do have a standardized process across the state for how things are structured, how this report is structured, the criteria for quantifying things, the criteria for determining what is significant as an impact, what mitigation looks like, and what the impact of that mitigation looks like.

PC1-31

In my very-limited experience, especially compared to our consultants, our staff, and the applicants, but in my very limited experience, I've experienced -- I've seen a benefit of having that

standardized process between projects. So while I appreciate that many of the assumptions could potentially be out -- you know, would have a mild degree of wiggle room around them, I think there's value in following this consistent process.

I do want to, again, thank -- thank the EIR team for the incredible amount of content and work that is in that very large document. I personally expect to come back to the following sections at length, when we get into the next phases of this project. When we start talking about the nuances of the development agreement, I'm definitely going to be relying heavily on the Traffic section, the Public Services and Recreation section, as we define things that we would like to see put in as constraints or as requests on behalf of the city and the community.

PC1-31 cont.

I expect, when we get into the zoning amendments and the rezoning components of this process, the Land Use and Planning section is going to be incredibly useful.

There are a lot of other -- there's a lot of other valuable content in there, but those, in particular, I think will be front of mind for me in the next section tonight and in subsequent meetings.

And so I will quickly just turn and see if other commissioners have follow-up questions.

Commissioner Silin.

COMMISSIONER SILIN: Thank you.

Going back to circulation and traffic, which sounds like a shared concern among many commissioners, I saw that in the Staff Report, it mentions that other projects, such as the META campuses and other projects on that side of 101, have trip caps from the City. The Staff Report talks about ways to do the counting and enforcement. PC1-32

But I'm wondering if implementing a trip cap is part of the EIR or the TDM, if that's appropriate?

Or, like, at what stage is that typically done, I guess?

KYLE PERATA: Yeah. So thanks for the question.

I think the discussion on whether or not there is a trip cap or a monitoring plan, some of that actually is more related to the policy decisions regarding the entitlements.

There certainly would be a monitoring plan associated with ensuring that the Transportation Demand Management Plan, that was used in the environmental analysis, is implemented.

But certainly regarding how that actually plays out with all the details, a lot of that will get flushed out in the potential -- or potentially get flushed out in

the Conditional Development Permit. And so I think a lot of those items are bringing up our, kind of, broader policy decisions regarding, you know, the appropriate, kind of, monitoring plan or caps, and where those caps may or may not be applied to across the site.

But certainly the EIR -- and I'll look to our CEQA consultant to confirm exactly how this translates into the EIR -- but the EIR found a less-than-significant impact to vehicle miles traveled with implementation of the applicant's proposed TDM plans for the office and residential.

So those would be required to be implemented as part of the project, at a minimum.

JESSICA VIRAMONTES: I don't have anything to add.

Ollie, is there anything you want to add to that?

OLLIE ZHOU: No.

CHAIR SCHINDLER: Commissioner Silverstein.

COMMISSIONER SILVERSTEIN: I just wanted to echo what Commissioner Do said about the reduced-parking alternative. And I know we can talk about it in the study session, but specifically as relates to the EIR language itself.

PC1-33

I noticed that in Table 3-6 -- or 3.3-6, on Potential Mitigation Measures of TDM and Estimated Trips,

PC1-33 cont.

that the amount of available parking is non-existent in those potential measures.

And then, in the kind of qualitative text regarding a reduced-parking alternative, it states that, "Precise changes in travel or behavior, in response to constrained parking alone, are difficult to predict and are not anticipated to reduce overall VMT."

While I agree with the "difficult to predict" part, I am in agreement with the previous statement that I would certainly anticipate that a lack of parking would reduce overall VMT.

I recognize that that's not a requirement at this point because the project is not above VMT thresholds, but I do take slight umbrage with the conclusion on -- on that alternative.

CHAIR SCHINDLER: Thank you, Commissioners.

Seeing no more questions indicated, I just want to confirm with staff and with the EIR team that you have received the feedback that you were seeking tonight, and ask if there are any points of clarification that we could offer?

CORINNA SANDMEIER: No. I think we've received the feedback. And we'll include that, of course, with the comments in the Final EIR.

CHAIR SCHINDLER: Thank you.

With that, I will close the public hearing for this Draft EIR, Item F-1, on our Agenda.

(Whereupon, Agenda Item F-1 ended.)

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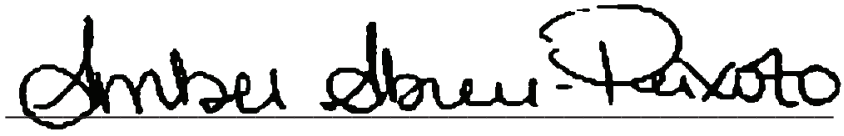
CERTIFICATE OF REPORTER

I, AMBER ABREU-PEIXOTO, hereby certify that the foregoing videotaped proceedings were taken in shorthand by me, a Certified Shorthand Reporter of the State of California, and was thereafter transcribed into

typewriting, and that the foregoing transcript constitutes a full, true, and correct report of said proceedings which took place;

That I am a disinterested person to the said action.

IN WITNESS WHEREOF, I have hereunto set my hand this 6th day of August, 2024.



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Appendix 2
Transportation Impact Analysis

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Parkline

Transportation Impact Analysis

Prepared for:

ICF

July 11, 2024

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Executive Summary

This report presents the results of the Transportation Impact Analysis (TIA) conducted for Parkline (Proposed Project) in Menlo Park, California. Lane Partners (Project Sponsor) is proposing to redevelop SRI International's existing 63.2-acre research campus adjacent to city hall and near Menlo Park's downtown and Caltrain station (Project Site). The Proposed Project would include a new office/research and development (R&D) campus with no increase in office/R&D square footage; up to 550 new rental dwelling units at a range of affordability levels (comprised of 450 multi-family units and townhomes, and a proposed land dedication to an affordable housing developer that could accommodate up to 100 affordable units); new bicycle and pedestrian connections; and approximately 26 acres of the Project Site to be available as open space. In total, the Proposed Project would result in approximately 1,768,802 square feet (sf) of mixed-use development, with approximately 1,093,602 sf of office/R&D uses and approximately 675,200 sf of residential uses. The Proposed Project would demolish all buildings on SRI International's Campus, excluding Buildings P, S, and T, which would remain onsite and be operated by SRI International. The proposed dwelling units would consist of studio units and one-, two-, and three-bedroom units that would be distributed throughout four residential multi-family buildings and 19 townhouses. Consistent with the city's inclusionary housing requirements, 15 percent of these dwelling units (68 dwelling units) would be below-market rate (BMR) housing. Beyond the BMR requirement, an additional 100 dwelling units to be developed by an affordable housing developer would all be affordable and located within one building. Access to the residential area would be provided via driveways on Laurel Street and on Ravenswood Avenue. Access to the office/R&D area would be provided via driveways on Ravenswood Avenue and Middlefield Road.

The existing road network is not laid out consistent with the cardinal directions. As a result, for the purpose of this report, streets that run parallel to US 101 are assumed to run in a north-south direction, such as Middlefield Road and El Camino Real. Streets that run perpendicular to US 101 are assumed to run in an east-west direction, such as Marsh Road, Ravenswood Avenue, Ringwood Avenue, and Willow Road.

Because future commercial tenants in the office/R&D area are not yet known, proposed commercial buildings in the office/R&D area are designed to accommodate either office uses, R&D or life science uses, or a combination of both. Therefore, this report evaluates two buildout scenarios within the office/R&D area: a 100% office scenario and a 100% R&D scenario. This ensures the Proposed Project's maximum potential impact and any future commercial tenant mix is within the scope of the TIA analysis. Office uses would generate more peak-hour trips than R&D uses or a mix of office and R&D uses. Therefore, the 100% office scenario is used to evaluate traffic conditions at study intersections. For the VMT analysis, office/R&D land use is evaluated based on a daily VMT per employee metric, which would be the same whether the land use is office or R&D. Therefore, the VMT analysis addresses the VMT impacts of either scenario.

In addition, a project variant could reasonably be approved instead of the Proposed Project: the Increased Development Variant (Project Variant). The Project Variant is a variation of the Proposed Project at the same Project Site (although the Project Site would be slightly expanded to include 201 Ravenswood Avenue), generally with the same objectives, background, and development controls but with the following differences:

1. The Project Site has been expanded to include the parcel at 201 Ravenswood Avenue to create a continuous Project frontage area along Ravenswood Avenue and increase the overall Project Site by approximately 43,762 square feet (sf) (approximately 1.0 acre), for a total of approximately 64.2 acres;
2. The Project Variant would include up to 250 additional residential rental dwelling units compared to the Proposed Project (an increase from 550 to 800 units, inclusive of up to 154 units to be developed by an affordable housing developer);
3. The Project Variant would reduce the underground parking footprint within the site, both by removing underground parking from the multifamily residential buildings in the residential area and removing the underground parking connection between office/research-and-development (R&D) Building O1 and Building O5. As a result, Parking Garage (PG) 1 and PG2 increase in square footage and height compared to the Proposed Project and the number of structured spaces increases by 400 (with no change in the total number of parking spaces proposed for the office/R&D buildings); and
4. The Project Variant would include an approximately 2- to 3-million-gallon emergency water reservoir that would be buried below grade in the northeast area of the Project Site, in addition to a small pump station, an emergency well, and related improvements that would be built at and below grade (i.e., emergency generator, disinfection system, surge tank) (referred to as "reservoir" throughout this document). It would be built and operated by the city of Menlo Park.

This TIA evaluates both the Proposed Project and the Project Variant. To provide a conservative estimate, the peak-hour trips estimate for the Project Variant assumes a 100% office scenario within the office/R&D area under the Project Variant. The 100% office scenario is used to evaluate traffic conditions at study intersections. For the VMT analysis, office/R&D land use is evaluated based on a daily VMT per employee metric, which would be the same whether the land use is office or R&D. Therefore, the VMT analysis addresses the VMT impacts of either scenario under the Project Variant.

CEQA Vehicle-Miles Traveled Analysis

IMPACT (TRA-2 in Transportation section of the Environmental Impact Report prepared for the Proposed Project): As shown in Table ES-1, the Proposed Project's office/R&D, and residential land uses would not generate VMT exceeding their respective thresholds. Therefore, the project's VMT impact would be less than significant.

Table ES-1
Office/R&D and Residential VMT Evaluation

Land Use	Regional Average	VMT Threshold	Project VMT [3]	VMT Impact
Office/R&D [1]	15.9	13.6	13.5	No
Residential [2]	13.1	11.2	9.7	No

Notes:
** All data referenced the latest Menlo Park citywide travel demand forecast model.*
1. VMT for office/R&D land use is reported in VMT per employee.
2. VMT for residential land use is reported in VMT per capita.
3. Project VMT accounted for implementation of a TDM Plan with 28% trip reduction target for the office/R&D land use, and 25% trip reduction target for the residential land use.

Non-CEQA Levels of Service Transportation Analysis

The following intersections were adversely affected under either near-term plus project or cumulative plus project scenarios during at least one peak hour (see Table ES-2):

4. Florence Street/Bohannon Drive and Marsh Road
6. Bay Road and Ringwood Avenue
7. US 101 Northbound Ramps and Willow Road
9. Bay Road and Willow Road
10. Durham Street and Willow Road
13. Middlefield Road and Willow Road
21. Laurel Street and Encinal Avenue
22. Laurel Street and Glenwood Avenue
32. El Camino Real and Ravenswood Avenue/Menlo Avenue
36. University Drive and Valparaiso Avenue
38. Santa Cruz Avenue and Avy Avenue
44. O'Brien Drive and Willow Road
45. Newbridge Street and Willow Road
46. Bayfront Expressway and University Avenue

Bold denotes intersections that would be non-compliant under cumulative plus project conditions during either AM or PM peak hours but are compliant under near-term plus project conditions during both peak hours.

A micro-simulation analysis was conducted for the study intersections on Middlefield Road and Ravenswood Avenue in the project vicinity to identify potential project effects and improvements along these corridors. The results of the micro-simulation analysis show that the following intersections would be adversely affected by the Proposed Project.

15. Middlefield Road and Ravenswood Avenue
16 Middlefield Road and D Street/Ringwood Avenue
17. Middlefield Road and A Street/Seminary Drive
19. Project Driveway B1 West and Ravenswood Avenue
20. Project Driveway/Pine Street and Ravenswood Avenue

Table ES-2
Intersection Level of Service Summary

#	Intersection	Peak Hour	Traffic Control	Existing Conditions		Near-Term (2027) Conditions[2]								Cumulative (2040) Conditions[2]								
						No Project		Project Conditions[3]				With Improvement[4]				No Project		Project Conditions[3]				With Improvement[4]		
				Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
1	US 101 NB Off-Ramp & Marsh Rd	AM	Signal	15.9	B	17.5	B	17.5	B	<4	<0.8				22.6	C	22.7	C	<4	<0.8			
		PM		18.8	B	20.5	C	20.8	C	<4	<0.8				23.0	C	23.4	C	<4	<0.8			
2	US 101 SB Off-Ramp & Marsh Rd	AM	Signal	20.6	C	22.2	C	25.4	C	<4	6.3				21.7	C	23.2	C	<4	<0.8			
		PM		22.4	C	23.0	C	23.2	C	<4	<0.8				24.3	C	24.5	C	<4	<0.8			
3	Scott Dr & Marsh Rd	AM	Signal	22.5	C	22.9	C	22.8	C	<4	<0.8				29.0	C	29.0	C	<4	<0.8			
		PM		23.9	C	24.5	C	24.3	C	<4	<0.8				29.4	C	29.2	C	<4	<0.8			
4	Florence St/Bohannon Dr & Marsh Rd	AM	Signal	30.2	C	34.6	C	35.9	D	<4	3.3				**74.0**	**E**	**75.7**	**E**	<4	1.5	*Multimodal improvements*		
		PM		30.8	C	33.6	C	34.1	C	<4	1.3				47.3	D	52.6	D	5.3	13.4			
5	Bay Rd & Marsh Rd	AM	Signal	15.3	B	18.4	B	18.5	B	<4	<0.8				30.6	C	31.3	C	<4	2.2			
		PM		17.6	B	21.5	C	21.9	C	<4	<0.8				51.1	D	51.5	D	<4	<0.8			
6	Bay Rd & Ringwood Ave	AM	AWSC	28.5	D	**60.2**	**F**	**89.2**	**F**	29.0	29.0	*No feasible improvement*			**>120**	**F**	**>120**	**F**	29.8	29.8	*No feasible improvement*		
		PM		12.0	B	14.1	B	18.5	C	4.4	4.4				32.4	D	**47.9**	**E**	15.5	15.5			
7	US 101 NB Ramps & Willow Rd (SR 114)	AM	Signal	14.1	B	**OVERSAT**	**F**	**OVERSAT**	**F**	4.2	1.9	*No feasible improvement*			**OVERSAT**	**F**	**OVERSAT**	**F**	<4	1.2	*No feasible improvement*		
		PM		**100.0**	**F**	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8				**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
8	US 101 SB Ramps & Willow Rd (SR 114)	AM	Signal	10.1	B	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8				**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
		PM		19.8	B	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8				**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
9	Bay Rd & Willow Rd	AM	Signal	52.0	D	**OVERSAT**	**F**	**OVERSAT**	**F**	60.2	65.1	*No feasible improvement*			**OVERSAT**	**F**	**OVERSAT**	**F**	22.3	54.4	*No feasible improvement*		
		PM		9.9	A	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	4.0				**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
10	Durham St & Willow Rd	AM	Signal	26.7	C	**OVERSAT**	**F**	**OVERSAT**	**F**	51.3	86.8	**OVERSAT**	**F**	99.0	**OVERSAT**	**F**	**OVERSAT**	**F**	46.3	83.1	**OVERSAT**	**F**	>120
		PM		13.1	B	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	0.8	**OVERSAT**	**F**	<0.8	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	1.5	**OVERSAT**	**F**	<0.8
11	Coleman Ave & Willow Rd	AM	Signal	13.7	B	15.0	B	20.5	C	5.5	7.2				21.7	C	22.6	C	<4	<0.8			
		PM		12.7	B	13.7	B	19.6	B	5.9	8.5				18.2	B	19.3	B	<4	<0.8			
12	Gilbert Ave & Willow Rd	AM	Signal	14.6	B	14.7	B	18.3	B	<4	5.9				17.4	B	16.7	B	<4	<0.8			
		PM		11.5	B	12.3	B	24.8	C	12.5	20.3				13.8	B	18.1	B	4.3	7.9			
13	Middlefield Rd & Willow Rd	AM	Signal	50.5	D	50.9	D	**68.6**	**E**	17.7	34.8	*No feasible improvement*			**57.8**	**E**	**59.0**	**E**	<4	4.1	*No feasible improvement*		
		PM		52.9	D	53.7	D	**61.7**	**E**	8.0	10.0				**59.0**	**E**	**66.7**	**E**	7.7	10.5			
14	Laurel St & Willow Rd	AM	AWSC	9.9	A	10.0	B	10.4	B	<4	<0.8				11.3	B	11.7	B	<4	<0.8			
		PM		9.7	A	10.1	B	10.4	B	<4	<0.8				10.6	B	10.9	B	<4	<0.8			
15	Middlefield Rd & Ravenswood Ave[5]	AM	Signal	39.0	D	34.9	C	**80.4**	**F**	45.5	--	**57.5**	**E**	--	see footnote 5								
		PM		30.0	C	31.5	C	**59.2**	**E**	27.7	--	31.8	C	--									
16	Middlefield Rd & D St/Ringwood Ave[5]	AM	Signal	34.5	C	32.4	C	**60.5**	**E**	28.1	--	**71.6**	**E**	--	see footnote 5								
		PM		28.0	C	27.1	C	**OVERSAT**	**F**	>4	--	**>120**	**F**	--									
17	Middlefield Rd & Seminary Dr[5]	AM	TWSC	9.9	A	9.8	A	**OVERSAT**	**F**	>4	--	-	-	--	see footnote 5								
		PM		12.1	B	11.8	B	**OVERSAT**	**F**	>4	--	-	-	--									
18	Proj Dwy B1 E & Ravenswood Ave[5]	AM	Signal	Project Dwy				7.2	A	7.2	-	8.1	C	--	see footnote 5								
		PM						11.4	B	11.4	-	21.5	D	--									
19	Proj Dwy B1 West & Ravenswood Ave[5]	AM	TWSC	Project Dwy				26.3	B	26.3	--	16.9	A	--	see footnote 5								
		PM						**58.9**	**F**	58.9	--	30.5	D	--									
20	Proj Dwy/Pine St & Ravenswood Ave[5]	AM	TWSC	17.3	C	18.9	C	24.2	C	5.4	--	**39.8**	**E**	--	see footnote 5								
		PM		23.5	C	30.4	D	**OVERSAT**	**F**	>4	--	**58.1**	**F**	--									
21	Laurel St & Encinal Ave	AM	AWSC	14.9	B	18.5	C	20.2	C	<4	1.7				**37.9**	**E**	**46.0**	**E**	8.1	8.1	*Multimodal improvements*		
		PM		9.3	A	9.8	A	10.8	B	<4	1.0				12.7	B	14.4	B	<4	1.7			
22	Laurel St & Glenwood Ave	AM	AWSC	22.8	C	33.0	D	**58.9**	**F**	25.9	25.9	16.2	C	<0.8	**94.8**	**F**	**116.9**	**F**	22.1	22.1	25.3	C	<0.8
		PM		9.6	A	9.8	A	10.5	B	<4	<0.8	11.8	B	2.3	13.2	B	14.5	B	<4	1.3	13.1	B	<0.8
23	Laurel St & Oak Grove Ave	AM	Signal	18.9	B	20.5	C	22.7	C	<4	2.2				30.2	C	41.0	D	10.8	12.4			
		PM		13.3	B	16.0	B	17.5	B	<4	1.6				26.2	C	30.3	C	4.1	4.6			
24	Laurel St & Ravenswood Ave[5]	AM	Signal	30.2	C	33.8	C	44.6	D	10.8	--	38.7	D	--	see footnote 5								
		PM		47.9	D	49.4	D	52.4	D	<4	--	46.6	D	--									

Table ES-2 (Continued)
Intersection Level of Service Summary

#	Intersection	Peak Hour	Traffic Control	Existing Conditions		Near-Term (2027) Conditions[2]								Cumulative (2040) Conditions[2]								
						No Project		Project Conditions[3]				With Improvement[4]				No Project		Project Conditions[3]				With Improvement[4]		
				Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay		Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay	
25	Laurel St & Proj Dwy N	AM	TWSC	0.0	A	0.0	A	12.4	B	12.4	12.4					0.0	A	15.2	C	15.2	15.2			
		PM		0.0	A	0.0	A	12.6	B	12.6	12.6					0.0	A	16.0	C	16.0	16.0			
26	Laurel St & Proj Dwy S	AM	TWSC	8.7	A	8.9	A	9.1	A	<4	<0.8					10.4	B	10.7	B	<4	<0.8			
		PM		8.8	A	9.0	A	9.3	A	<4	<0.8					10.4	B	11.0	B	<4	<0.8			
27	Laurel St & Burgess Dr	AM	AWSC	8.9	A	9.2	A	9.5	A	<4	<0.8					11.2	B	11.8	B	<4	<0.8			
		PM		8.8	A	9.1	A	9.6	A	<4	<0.8					11.3	B	12.2	B	<4	0.9			
28	El Camino Real & Encinal Ave	AM	Signal	52.7	D	49.9	D	47.6	D	<4	32.1					**73.6**	**E**	**76.5**	**E**	<4	4.1			
	Menlo College Northbound			*47.0*	*D*	*47.0*	*D*	*47.0*	*D*	*<4*	*<0.8*					*46.8*	*D*	*46.8*	*D*	*<4*	*<0.8*			
	Encinal Ave Southbound			***>120***	***F***	***>120***	***F***	***>120***	***F***	*<4*	*<0.8*					***>120***	***F***	***>120***	***F***	*11.7*	*<0.8*			
		PM	Signal	30.0	C	30.3	C	36.3	D	6.0	2.8					39.6	D	51.1	D	11.5	3.4			
	Menlo College Northbound			*40.2*	*D*	*40.2*	*D*	*40.6*	*D*	*<4*	*<0.8*					*40.6*	*D*	*40.6*	*D*	*<4*	*<0.8*			
	Encinal Ave Southbound			***>120***	***F***	***>120***	***F***	***>120***	***F***	*16.3*	*32.2*					***>120***	***F***	***>120***	***F***	*54.1*	*<0.8*			
29	El Camino Real & Glenwood Ave	AM	Signal	32.9	C	*48.2*	D	52.1	D	<4	1.5					38.4	D	39.4	D	<4	43.9			
	Valparaiso Ave Northbound			***60.9***	***E***	***60.3***	***E***	***60.3***	***E***	*<4*	*<0.8*					***61.5***	***E***	***62.2***	***E***	*<4*	*1.0*			
	Glenwood Ave Southbound			***61.4***	***E***	***60.9***	***E***	***61.0***	***E***	*<4*	*<0.8*					***65.2***	***E***	***66.1***	***E***	*<4*	*1.6*			
		PM	Signal	29.9	C	33.8	C	35.7	D	<4	3.0					33.3	C	35.0	D	<4	2.4			
	Valparaiso Ave Northbound			***64.1***	***E***	***63.8***	***E***	***64.0***	***E***	*<4*	*<0.8*					***63.7***	***E***	***63.8***	***E***	*<4*	*<0.8*			
	Glenwood Ave Southbound			***67.8***	***E***	***66.6***	***E***	***65.9***	***E***	*<4*	*<0.8*					***66.8***	***E***	***66.0***	***E***	*<4*	*<0.8*			
30	El Camino Real & Oak Grove Ave	AM	Signal	33.7	C	34.6	C	34.3	C	<4	<0.8					36.1	D	36.0	D	<4	11.3			
	Oak Grove Ave Northbound			***55.7***	***E***	***56.4***	***E***	***56.4***	***E***	*<4*	*<0.8*					*52.5*	*D*	*52.5*	*D*	*<4*	*<0.8*			
	Oak Grove Ave Southbound			***66.3***	***E***	***66.0***	***E***	***65.5***	***E***	*<4*	*<0.8*					***65.1***	***E***	***65.2***	***E***	*<4*	*<0.8*			
		PM	Signal	23.9	C	26.0	C	26.2	C	<4	<0.8					28.4	C	28.6	C	<4	<0.8			
	Oak Grove Ave Northbound			***68.6***	***E***	***68.0***	***E***	***68.1***	***E***	*<4*	*<0.8*					***64.2***	***E***	***64.2***	***E***	*<4*	*<0.8*			
	Oak Grove Ave Southbound			***74.1***	***E***	***71.4***	***E***	***71.1***	***E***	*<4*	*<0.8*					***72.0***	***E***	***70.9***	***E***	*<4*	*<0.8*			
31	El Camino Real & Santa Cruz Ave	AM	Signal	5.8	A	8.2	A	7.8	A	<4	<0.8					9.2	A	8.7	A	<4	<0.8			
	Santa Cruz Ave Northbound			***64.5***	***E***	***67.3***	***E***	***67.3***	***E***	*<4*	*<0.8*					***66.0***	***E***	***66.0***	***E***	*<4*	*<0.8*			
	Santa Cruz Ave Southbound			***68.2***	***E***	***68.2***	***E***	***68.2***	***E***	*<4*	*<0.8*					***68.2***	***E***	***68.2***	***E***	*<4*	*<0.8*			
		PM	Signal	7.2	A	7.8	A	7.7	A	<4	<0.8					11.5	B	11.3	B	<4	<0.8			
	Santa Cruz Ave Northbound			***72.0***	***E***	***73.5***	***E***	***73.5***	***E***	*<4*	*<0.8*					***71.2***	***E***	***71.2***	***E***	*<4*	*<0.8*			
	Santa Cruz Ave Southbound			***73.9***	***E***	***73.4***	***E***	***73.4***	***E***	*<4*	*<0.8*					***70.2***	***E***	***70.2***	***E***	*<4*	*<0.8*			
32	El Camino Real & Ravenswood Ave	AM	Signal	39.9	D	42.0	D	53.5	D	11.5	47.0					51.7	D	**56.9**	**E**	5.2	5.8			
	Menlo Ave Northbound			***81.2***	***F***	***90.3***	***F***	***104.8***	***F***	*14.5*	*15.5*					***>120***	***F***	***>120***	***F***	*24.9*	*25.6*			
	Ravenswood Ave Southbound			***59.9***	***E***	***60.4***	***E***	***62.2***	***E***	*<4*	*2.1*					***64.6***	***E***	***66.8***	***E***	*<4*	*4.7*			*Multimodal improvements*
		PM	Signal	32.7	C	36.2	D	41.9	D	5.7	7.1					40.1	D	43.7	D	<4	1.1			
	Menlo Ave Northbound			***66.2***	***E***	***65.5***	***E***	***65.5***	***E***	*<4*	*<0.8*					***65.8***	***E***	***68.7***	***E***	*<4*	*3.3*			
	Ravenswood Ave Southbound			***56.0***	***E***	***55.8***	***E***	***57.5***	***E***	*<4*	*1.1*					*54.7*	*D*	***56.4***	***E***	*<4*	*2.1*			
33	El Camino Real & Roble Ave	AM	Signal	4.3	A	6.6	A	6.2	A	<4	6.0					9.3	A	8.9	A	<4	6.0			
	Roble Ave Northbound			***69.1***	***E***	***66.4***	***E***	***66.4***	***E***	*<4*	*<0.8*					***65.0***	***E***	***65.0***	***E***	*<4*	*<0.8*			
	Roble Ave Southbound			***63.6***	***E***	***63.3***	***E***	***63.3***	***E***	*<4*	*<0.8*					***57.4***	***E***	***57.4***	***E***	*<4*	*<0.8*			
		PM	Signal	7.2	A	9.7	A	9.4	A	<4	<0.8					11.9	B	11.4	B	<4	<0.8			
	Roble Ave Northbound			***71.9***	***E***	***71.0***	***E***	***71.0***	***E***	*<4*	*<0.8*					***70.2***	***E***	***70.2***	***E***	*<4*	*<0.8*			
	Roble Ave Southbound			***62.5***	***E***	***62.3***	***E***	***62.3***	***E***	*<4*	*<0.8*					***61.4***	***E***	***61.4***	***E***	*<4*	*<0.8*			
34	El Camino Real & Middle Ave	AM	Signal	15.7	B	16.1	B	15.3	B	<4	<0.8					20.3	C	19.3	B	<4	<0.8			
	Middle Ave Northbound			***64.3***	***E***	***62.9***	***E***	***62.9***	***E***	*<4*	*<0.8*					***61.6***	***E***	***61.6***	***E***	*<4*	*<0.8*			
		PM	Signal	18.2	B	18.1	B	18.1	B	<4	<0.8					18.8	B	18.7	B	<4	<0.8			
	Middle Ave Northbound			***62.2***	***E***	***62.2***	***E***	***62.2***	***E***	*<4*	*<0.8*					***62.0***	***E***	***62.0***	***E***	*<4*	*<0.8*			
35	El Camino Real & Cambridge Ave	AM	Signal	5.1	A	5.1	A	4.8	A	<4	<0.8					5.3	A	5.0	A	<4	<0.8			
	Cambridge Ave Northbound			***64.6***	***E***	***64.5***	***E***	***64.5***	***E***	*<4*	*<0.8*					***64.5***	***E***	***64.5***	***E***	*<4*	*<0.8*			
		PM	Signal	5.7	A	5.9	A	5.7	A	<4	<0.8					7.6	A	7.4	A	<4	20.1			
	Cambridge Ave Northbound			***69.2***	***E***	***69.2***	***E***	***69.2***	***E***	*<4*	*<0.8*					***69.2***	***E***	***69.2***	***E***	*<4*	*<0.8*			

Table ES-2 (Continued)
Intersection Level of Service Summary

#	Intersection	Peak Hour	Traffic Control	Existing Conditions		Near-Term (2027) Conditions[2]						Cumulative (2040) Conditions[2]								
						No Project		Project Conditions[3]				With Improvement[4]			No Project		Project Conditions[3]				With Improvement[4]		
				Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
36	University Dr & Valparaiso Ave	AM	Signal	15.3	B	17.2	B	17.8	B	<4	<0.8				**90.4**	**F**	**91.1**	**F**	<4	1.5	*No feasible improvement*		
		PM		13.4	B	14.3	B	14.6	B	<4	<0.8				54.5	D	**56.2**	**E**	<4	2.7			
37	University Dr & Santa Cruz Ave	AM	Signal	9.7	A	9.9	A	10.1	B	<4	<0.8				11.3	B	11.5	B	<4	<0.8			
		PM		9.5	A	11.2	B	11.7	B	<4	<0.8				14.7	B	15.5	B	<4	1.0			
38	Orange Ave/Santa Cruz Ave/Avy Ave	AM	AWSC	18.1	C	20.2	C	21.9	C	<4	1.7				22.3	C	24.3	C	<4	2.0	22.1	C	16.5
		PM		19.1	C	23.2	C	27.3	D	4.1	4.1				30.4	D	**35.2**	**E**	4.8	4.8	17.0	B	<0.8
39	Santa Cruz Ave & Sand Hill Rd	AM	Signal	46.4	D	46.5	D	47.2	D	<4	2.5				46.9	D	47.5	D	<4	2.6			
		PM		41.0	D	41.5	D	41.9	D	<4	<0.8				43.1	D	43.5	D	<4	<0.8			
40	Santa Cruz Ave & Junipero Serra Blvd	AM	Signal	35.9	D	36.5	D	36.5	D	<4	<0.8				38.3	D	38.4	D	<4	<0.8			
		PM		38.6	D	38.9	D	39.3	D	<4	<0.8				39.6	D	40.0	D	<4	<0.8			
41	Bayfront Expwy & Willow Rd (SR 114)*	AM	Signal	18.1	B	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8				**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
		PM		**116.4**	**F**	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8				**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
42	Hamilton Ave & Willow Rd (SR 114)	AM	Signal	15.3	B	**OVERSAT**	**F**	**OVERSAT**	**F**	7.9	20.0				**OVERSAT**	**F**	**OVERSAT**	**F**	6.6	14.6			
	Hamilton Ave Northbound			*29.9*	*C*	*30.7*	*C*	*30.7*	*C*	*<4*	*<0.8*				***60.6***	***E***	***60.6***	***E***	*<4*	*<0.8*			
	Hamilton Ave Southbound			*35.9*	*D*	*40.4*	*D*	*40.4*	*D*	*<4*	*<0.8*				***66.5***	***E***	*66.5*	*E*	*<4*	*<0.8*			
		PM	Signal	**72.3**	**E**	**OVERSAT**	**F**	**OVERSAT**	**F**	8.2	5.4				**OVERSAT**	**F**	**OVERSAT**	**F**	8.5	6.9			
	Hamilton Ave Northbound			*45.2*	*D*	***>120***	***F***	***>120***	***F***	*<4*	*<0.8*				***>120***	***F***	***>120***	***F***	*<4*	*<0.8*			
	Hamilton Ave Southbound			*58.0*	*E*	***>120***	***F***	***>120***	***F***	*<4*	*<0.8*				***>120***	***F***	***>120***	***F***	*<4*	*<0.8*			
43	Ivy Dr & Willow Rd (SR 114)	AM	Signal	18.7	B	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	3.8				**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
	Ivy Dr Southbound			***81.0***	***F***	***76.4***	***E***	***76.4***	***E***	*<4*	*<0.8*				***76.9***	***E***	***76.9***	***E***	*<4*	*<0.8*			
		PM	Signal	42.3	D	**OVERSAT**	**F**	**OVERSAT**	**F**	9.8	15.9				**OVERSAT**	**F**	**OVERSAT**	**F**	8.5	13.5			
	Ivy Dr Southbound			***69.7***	***E***	***66.8***	***E***	***66.8***	***E***	*<4*	*<0.8*				***66.9***	***E***	***66.9***	***E***	*<4*	*<0.8*			
44	O'Brien Dr & Willow Rd (SR 114)	AM	Signal	25.2	C	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	4.4	*Willow corridor improvements + Multimodal improvements*			**OVERSAT**	**F**	**OVERSAT**	**F**	<4	2.4	*Willow corridor improvements + Multimodal improvements*		
	O'Brien Dr Northbound			***87.0***	***F***	***110.9***	***F***	***117.8***	***F***	*6.9*	*6.8*				***>120***	***F***	***>120***	***F***	*8.5*	*8.7*			
		PM	Signal	**>120**	**F**	**OVERSAT**	**F**	**OVERSAT**	**F**	11.9	20.4				**OVERSAT**	**F**	**OVERSAT**	**F**	6.6	11.0			
	O'Brien Dr Northbound			***>120***	***F***	***>120***	***F***	***>120***	***F***	*8.4*	*8.4*				***>120***	***F***	***>120***	***F***	*8.5*	*8.7*			
45	Newbridge St & Willow Rd (SR 114)	AM	Signal	**>120**	**F**	**OVERSAT**	**F**	**OVERSAT**	**F**	115.5	68.6				**OVERSAT**	**F**	**OVERSAT**	**F**	76.9	59.8			
	Bay Rd Northbound			***61.8***	***E***	***81.4***	***F***	*39.9*	*D*	*<4*	*<0.8*				*40.2*	*D*	*38.3*	*D*	*<4*	*<0.8*			
	Newbridge St Southbound			***>120***	***F***	***118.9***	***F***	***62.1***	***E***	*<4*	*<0.8*	*Willow corridor improvements + Multimodal improvements*			***62.4***	***E***	***63.9***	***E***	*<4*	*2.3*	*Willow corridor improvements + Multimodal improvements*		
		PM	Signal	**>120**	**F**	**OVERSAT**	**F**	**OVERSAT**	**F**	96.6	80.1				**OVERSAT**	**F**	**OVERSAT**	**F**	18.7	8.1			
	Bay Rd Northbound			*43.8*	*D*	*33.1*	*C*	*41.3*	*D*	*8.2*	*<0.8*				*38.9*	*D*	*39.0*	*D*	*<4*	*<0.8*			
	Newbridge St Southbound			***66.9***	***E***	***59.8***	***E***	***79.9***	***E***	*20.1*	*17.8*				***>120***	***F***	***>120***	***F***	*4.3*	*4.4*			
46	Bayfront Expwy & University Ave*	AM	Signal	15.5	B	16.2	B	16.5	B	<4	<0.8	No Feasible Improvement			17.3	B	17.7	B	<4	<0.8	No Feasible Improvement		
		PM		**86.8**	**F**	**97.5**	**F**	**101.5**	**F**	4.0	5.3				**>120**	**F**	**>120**	**F**	4.1	5.6			

Notes:

* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control.

[1] Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

[2] Average delay and level of service for the study intersections (7, 8, 41-45) were based off the microsimulation analysis conducted for the Willow Village project. Intersections that showed OVERSAT and LOS F were assumed to operate the same for this project and under project conditions. For intersections that were not shown OVERSAT and LOS F in the Willow Village project, the results from the VISTRO analysis done for this project are reported. "OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

[3] This assumes 100% office scenario.

[4] The intersection delay for intersections under project conditions with improvement is compared to without project conditions.

[5] Intersections fronting the project site are analyzed using a microsimulation model. A cumulative analysis is not completed. Certain intersections would experience capacity issues where the demand cannot be served by the intersection, and are indicated with OVERSAT. Oversaturated intersections would

Bold indicates substandard level of service

Bold indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

Adverse Effects and Recommended Improvements

Improvement options were studied for each intersection that were found to be non-compliant under the near-term plus project conditions, and cumulative plus project conditions, were compared to near-term no project, and cumulative no project conditions, respectively. Potential improvement strategies are shown in Table ES-3.

Table ES-3
Recommended Improvements

#	Intersection	Potential Improvement Considered	Recommendation
4	Bohannon Drive/Florence Street and Marsh Road	- Class II buffered bike lanes along Marsh Road from Bay Road to Scott Road (City's TIF program). - Physical intersection improvements.	The City's TIF program proposes Class II buffered bike lanes along Marsh Road from Bay Road to Scott Road in both directions, which could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. Implementation of these multi-modal improvements would partially address the Proposed Project's share of the non-compliant operations at this intersection. Physical improvements to increase the intersection capacity are considered infeasible.
6	Bay Road and Ringwood Avenue	- A traffic signal. - Physical intersection improvements.	A traffic signal is not recommended. To effectively operate the signalized intersection, it would be necessary to close off Sonoma Avenue from the intersection or convert Sonoma Avenue to one-way street, so the intersection would operate as a four-leg intersection. Restricting the access to Sonoma Avenue from the intersection is undesirable. Physical improvements to increase the intersection capacity are considered infeasible.
9	Bay Road and Willow Road	- Modifing the southbound approach at this intersection to two left-turn lanes and one right-turn lane and modifing the westbound approach to add a right-turn lane (City's TIF program).	This improvement would require removing trees in the median and adjacent to the intersection, which is undesirable. Therefore, the improvement is not recommended.
10	Durham Street and Willow Road	- Restriping southbound Hospital Plaza to include 1 left-turn, and 1 shared through-right lane. North/south legs operate with protected phasing.	With this improvement, the PM peak hour non-compliance would be eliminated. If this recommended improvement measure is implemented, the Project should contribute its fair share towards the improvement.
7 44 45	US 101 NB Ramps, O'Brien Drive, Newbridge Street, at Willow Road	- An adaptive traffic signal coordination system on the Willow Road corridor to improve traffic flow (City's project). - Multi-modal improvements along the Willow Road corridor (City's TIF program). - Physical intersection improvements.	The TIF program proposes multi-modal improvements along this section of Willow Road, which could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. With implementation of these multi-modal improvements, the intersection deficiencies could be further reduced and partially address the Proposed Project's share of the non-compliant operations along Willow Road. Physical improvements to increase the intersection capacity are considered infeasible.
13	Middlefield Road and Willow Road	- Physical intersection improvements. - A roundabout.	It is infeasible to add lanes to increase the capacity of the intersection. A potential improvement is to provide a roundabout with a bypass lane for westbound right-turn traffic. However, the improvement would require additional detailed analysis to determine its feasibility.

Table ES-3 (Continued)
Recommended Improvements

#	Intersection	Potential Improvement Considered	Recommendation
21	Laurel Street and Encinal Avenue	- Installing sidewalks or an asphalt pathway on western side of Laurel Street between Encinal Avenue and Glenwood Avenue (City's TIF program). - A traffic signal. - Physical intersection improvements.	The TIF program proposes to install sidewalks or an asphalt pathway on western side of Laurel Street between Encinal Avenue and Glenwood Avenue, which could shift some motor vehicle traffic to alternative modes of travel, reduce congestion, and partially address the Proposed Project's share of the non-compliant operations at this intersection. The City currently has no plans to install traffic signals at the intersection. Other physical improvements to increase the intersection capacity are considered infeasible.
22	Laurel Street and Glenwood Avenue	- Installing sidewalks or an asphalt pathway on western side of Laurel Street between Encinal Avenue and Glenwood Avenue (City's TIF program).	The TIF program proposes to install sidewalks or an asphalt pathway on western side of Laurel Street between Encinal Avenue and Glenwood Avenue, which could shift some motor vehicle traffic to pedestrian modes of travel, reduce congestion, and partially address the Proposed Project's share of the non-compliant operations at this intersection.
32	El Camino Real and Ravenswood Avenue/Menlo Avenue	- Multimodal improvements (City's TIF program). - Reducing project trips through land use and TDM.	The multi-modal improvements could shift some motor vehicle traffic to alternative modes of travel, reduce congestion, and partially address the Proposed Project's share of the non-compliant operations at this intersection. A sensitivity analysis shows that the 100% R&D scenario with 30% TDM trip reductions would be sufficient to avoid the adverse effect of the Proposed Project on intersection operations.
36	University Drive and Valparaiso Avenue	- Physical intersection improvements.	Physical improvements to increase the intersection capacity are considered infeasible.
38	Santa Cruz Avenue and Avy Avenue	- A traffic signal. - Reducing the curb radius at the southeast corner of intersection abd bringing bicycle lane to the left side of the northbound Santa Cruz Avenue right-turn lane (City's TIF program). - Class II bicycle lanes on Avy Avenue between Santa Cruz Avenue and Monte Rosa Drive by removing on-street parking (City's TIF program). - Reducing project trips through land use and TDM.	Periodic monitoring of traffic operations at this intersection should be conducted to determine if signalization is needed. If warranted, implementation of the new traffic signal would address the Proposed Project's share of the non-compliant operation and bring the intersection into compliance with the TIA Guidelines. The TIF programs would improve bicycle travel through the intersection. Implementing these multi-modal facility improvements could shift some motor vehicle traffic to alternative modes of travel, reduce congestion, and partially address the Proposed Project's share of the non-compliant operations at this intersection. A sensitivity analysis shows that the 100% R&D scenario with 40% TDM trip reductions would be sufficient to avoid the adverse effect of the Proposed Project on intersection operations.
46	Bayfront Expressway and University Avenue	- Evaluating the potential for grade separation to allow conflicting movements to occur simultaneously at the intersection (City's TIF program). - Restriping Bayfront Expressway to add bus-only lanes on the shoulders during peak periods and implementing signal timing improvements (MTC Dumbarton Forward project).	The TIF program could potentially improve traffic operation, the improvement is considered infeasible due to right-of-way constraints and/or adverse effects on adjacent wetlands and the Dumbarton Rail corridor. Specific details are unknown regarding the Dumbarton Forward project improvements at the intersection. The improvements' effectiveness in addressing the Project's adverse effect on traffic operations cannot be determined. Furthermore, since this project is not led by the City of Menlo Park, implementation cannot be guaranteed

Table ES-3 (Continued)
Recommended Improvements

#	Intersection	Potential Improvement Considered	Recommendation
15	Middlefield Road and Ravenswood Avenue	Based on the micro-simulation analysis, the following improvements were identified to improve traffic operations along Middlefield Road and Ravenswood Avenue in the immediate project vicinity:	
16	Middlefield Road and Ringwood Avenue	- Changing the east/west phasing at Middlefield Road and Ringwood Avenue (#16) from permitted to split phasing and modifying the signal timings at Middlefield Road & Ravenswood Avenue (#15). The analysis assumed half cycle length at the Middlefield/Ravenswood intersection during the PM peak hour.	
17	Middlefield Road and Seminary Drive	- A new traffic signal at Middlefield Road and Seminary Drive (#17) with protected north/south phasing and split east/west phasing and optimized cycle length. Through movements on Seminary Drive should be prohibited with physical islands.	
19	Project Driveway B1 West and Ravenswood Avenue	- Extension of the northbound left-turn storage length at Middlefield Road and Seminary Drive (#17) to 325 feet.	
20	Project Driveway/Pine Street and Ravenswood Avenue	- Adding medians with left-turn pockets or two-way left-turn lane along Ravenswood Avenue between the proposed project driveway at W First Street and Laurel Street.	

Intersection Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis for intersection left-turning movements where the Proposed Project would add significant trips per lane in the vicinity of the Project Site and affect intersection operations. Locations where the estimated 95th percentile queues would exceed the available storage capacity for the movement are discussed below. Queuing issues are operational issues resulting from signal timing and queue storage provisions. Queuing issues are not considered a CEQA issue related to hazards because they are not related to a geometric design feature or incompatible use.

Southbound Left-Turn at Bay Road and Willow Road (#9)

Under near-term conditions, the 95th percentile queue would exceed the storage length of the turn lane by 7 vehicles during the AM peak hour. The Proposed Project would add one vehicle to the 95th percentile queue during the AM peak hour and cause the 95th percentile queue to exceed the storage length by 2 vehicles during the PM peak hour. The southbound approach on Bay Road is 24 feet wide for approximately 380 feet long north of Willow Road, which can be striped to provide 2 approach lanes with the inside lane being used by the left turn traffic. It should be noted that this improvement is not desired because it would require tree removal and lane widening.

Southbound Left-Turn at Middlefield Road and Willow Road (#13)

Under near-term conditions, the 95th percentile queue would exceed the storage length of the turn lane by 2 vehicles during the PM peak hour. The Proposed Project would add 9 vehicles to the 95th percentile queue during the PM peak hour and cause the 95th percentile queue to exceed the storage length by one vehicle during the AM peak hour. There is no room to further extend this left-turn lane. It is also infeasible to add a turn lane to increase the storage capacity for the southbound left-turn lane.

Southbound Left-Turn at El Camino Real and Ravenswood Avenue (#32)

The Proposed Project would cause the 95th percentile queue to exceed the storage length by 8 vehicles during the AM peak hour. There is no room to further extend this left-turn lane. It is also infeasible to add a turn lane to increase the storage capacity for the southbound left-turn lane.

Westbound Left-Turn at El Camino Real and Ravenswood Avenue (#32)

Under near-term conditions, the 95th percentile queue would exceed the storage of the left-turn lane by 3 vehicles in the AM peak hour and one vehicle in the PM peak hour. The Proposed Project would cause the 95th percentile queue to exceed the storage length by 4 vehicles during the AM peak hour and 5 vehicles in the PM peak hour. There is no room to further extend the left-turn lanes because this would require removing trees and the signage in the median. It is also infeasible to add a turn lane to increase the storage capacity for the left-turn movement.

Micro-Simulation Queueing Analysis

The micro-simulation analysis was conducted to evaluate traffic operations and vehicles queuing along the Middlefield Road and Ravenswood Avenue. Due to the close proximity of the study intersections on Middlefield Road and Ravenswood Avenue, the micro-simulation analysis showed that the Proposed Project would contribute to significant traffic congestion along Middlefield Road. The following study intersections along the corridors would experience 95th percentile queues that extend beyond the existing left-turn storage capacity during at least one of the peak hours under near-term plus project conditions. The 95th percentile queues for through lanes along Middlefield Road and Ravenswood Avenue are also estimated to extend from one intersection to an upstream intersection.

- Middlefield Road and Ravenswood Avenue (#15)
- Middlefield Road and Ringwood Avenue (#16)
- Middlefield Road and Seminary Drive (#17)
- Laurel Street and Ravenswood Avenue (#24)

With the identified improvements described in Table ES-3, traffic operations would improve significantly along Middlefield Road near the Project Site with reduced vehicle queues. However, 95th percentile queues would still extend beyond the existing left-turn storage capacity.

Freeway Facilities Analysis

A freeway analysis is conducted under cumulative plus project conditions. The Proposed Project would add traffic greater than 1% capacity to the following study freeway segments operating below its LOS standard:

- SR 84 – from Alameda County Line to University Avenue – AM Peak Hour
- US 101 – between Santa Clara County Line and Whipple Avenue – AM & PM Peak Hours

It should be noted that the cumulative plus project conditions model run assumed the US 101 express lane project in San Mateo County. Improvements to eliminate the adverse freeway effects on US 101 and on SR 84 within San Mateo County would require additional capacity improvements and/or additional TDM measures that would reduce peak-hour vehicle trip-making by more than 60%. San Mateo County currently has no plans to further improve US 101 beyond the identified express lane projects. There are also no identified plans to improve the Bayfront Expressway (SR 84) corridor. Such an aggressive TDM plan would also not be feasible.

The Proposed Project's adverse effects on US 101 and on SR 84 freeway segments in San Mateo County would remain.

Freeway Ramp Analysis

A freeway ramp analysis is conducted under near term plus project conditions to determine whether freeway ramps would continue to have sufficient capacity to serve the forecasted traffic demand. Under near term plus project conditions, all study freeway ramps would continue to have sufficient capacity to serve the anticipated demand.

Site Access, Circulation, and Parking

Hexagon recommends the following regarding the internal Project Site circulation:

- The Proposed Project should ensure any landscaping and signage will be located in such a way as to ensure an unobstructed view for drivers entering and exiting the site.
- Prior to final design, the Project Sponsor shall coordinate with City staff to ensure the site driveways, parking aisles, parking spaces, multimodal facility improvements are designed per City standards.

Project Variant Analysis

The Project Variant would not result in additional CEQA significant impacts or adverse transportation operational effects compared to the Proposed Project.

For intersection levels of service analysis, the improvements recommended for the Project Variant would be the same as those for the Proposed Project, as there are no additional improvements that can be recommended given the existing right-of-way.

1. Introduction

This report presents the results of the Transportation Impact Analysis (TIA) conducted for Parkline (Proposed Project) in Menlo Park, California (see Figure 1). Lane Partners (Project Sponsor) is proposing to redevelop SRI International's existing 63.2-acre research campus adjacent to city hall and near Menlo Park's downtown and Caltrain station (Project Site). The Proposed Project would include a new office/research and development (R&D) campus with no increase in office/R&D square footage; up to 550 new rental dwelling units at a range of affordability levels (comprised of 450 multi-family units and townhomes, and a proposed land dedication to an affordable housing developer that could accommodate up to 100 affordable units); new bicycle and pedestrian connections; and approximately 26 acres of the Project Site to be available as open space. In total, the Proposed Project would result in approximately 1,768,802 square feet (sf) of mixed-use development, with approximately 1,093,602 sf of office/R&D uses and approximately 675,200 sf of residential uses. The Proposed Project would demolish all buildings on SRI International's Campus, excluding Buildings P, S, and T, which would remain onsite and be operated by SRI International. The proposed dwelling units would consist of studio units and one-, two-, and three-bedroom units that would be distributed throughout four residential multi-family buildings and 19 townhouses. Consistent with the city's inclusionary housing requirements, 15 percent of these dwelling units (68 dwelling units) would be below-market rate (BMR) housing. Beyond the BMR requirement, an additional 100 dwelling units to be developed by an affordable housing developer would all be affordable and located within one building. Access to the residential area would be provided via driveways on Laurel Street and on Ravenswood Avenue (see Figure 2). Access to the office/R&D area would be provided via driveways on Ravenswood Avenue and Middlefield Road.

The existing road network is not laid out consistent with the cardinal directions. As a result, for the purpose of this report, streets that run parallel to US 101 are assumed to run in a north-south direction, such as Middlefield Road and El Camino Real. Streets that run perpendicular to US 101 are assumed to run in an east-west direction, such as Marsh Road, Ravenswood Avenue, Ringwood Avenue, and Willow Road.

Because future commercial tenants in the office/R&D area are not yet known, proposed commercial buildings in the office/R&D area are designed to accommodate either office uses, R&D or life science uses, or a combination of both. Therefore, this report evaluates two buildout scenarios within the office/R&D area: a 100% office scenario and a 100% R&D scenario. This ensures the Proposed Project's maximum potential impact and any future commercial tenant mix is within the scope of the TIA analysis. Office uses would generate more peak hour trips than R&D uses or a mix of office and R&D uses. Therefore, the 100% office scenario is used to evaluate traffic conditions at study intersections. For the VMT analysis, office/R&D land use is evaluated based on a daily VMT per employee metric,

which would be the same whether the land use is office or R&D. Therefore, the VMT analysis addresses the VMT impacts of either scenario.

In addition, a project variant could reasonably be approved instead of the Proposed Project: the Increased Development Variant (Project Variant). The Project Variant is a variation of the Proposed Project at the same Project Site (although the Project Site would be slightly expanded), generally with the same objectives, background, and development controls but with the following differences compared to the Proposed Project:

1) The Project Variant Site would include the Project Site and the parcel at 201 Ravenswood Avenue to create a continuous Project frontage area along Ravenswood Avenue and increase the size of the overall Project Site by approximately 43,762 sf (approximately 1.0 acre) to a total of approximately 64.2 acres;

2) The Project Variant would include up to 250 additional residential rental dwelling units compared to the Proposed Project (an increase from 550 to 800 units, inclusive of up to 154 units to be developed by an affordable housing developer);

3) The Project Variant would reduce the underground parking footprint within the site, both by removing underground parking from the multifamily residential buildings in the residential area and removing the underground parking connection between Building 1 (O1) and Building 05 in the office/R&D area. As a result, Parking Garage (PG) 1 and PG2 increase in square footage and height compared to the Proposed Project and the number of structured spaces increases by 400 (with no change in the total number of parking spaces proposed for the office/R&D buildings); and

4) The Project Variant would include an approximately 2 to 3-million-gallon emergency water reservoir that would be buried below grade at the northeast area of the Project Site, in addition to a small pump station and related improvements to be built at-grade. It would be built and operated by the city of Menlo Park.

This TIA evaluates both the Proposed Project and the Project Variant. To provide a conservative estimate, the peak hour trips estimate for the Project Variant assumes a 100% office scenario within the office/R&D area under the Project Variant. The 100% office scenario is used to evaluate traffic conditions at study intersections. For the VMT analysis, office/R&D land use is evaluated based on a daily VMT per employee metric, which would be the same whether the land use is office or R&D. Therefore, the VMT analysis addresses the VMT impacts of either scenario under the Project Variant. Chapter 4 includes an analysis of the Project Variant.

Scope of Study

The purpose of the transportation study is to identify any transportation operational issues in accordance with City of Menlo Park standards and procedures. This report includes a CEQA VMT analysis, multimodal analysis, non-CEQA level of service (LOS) analysis (or roadway congestion analysis), and on-site access and circulation review to inform local planning efforts per the City's TIA Guidelines.

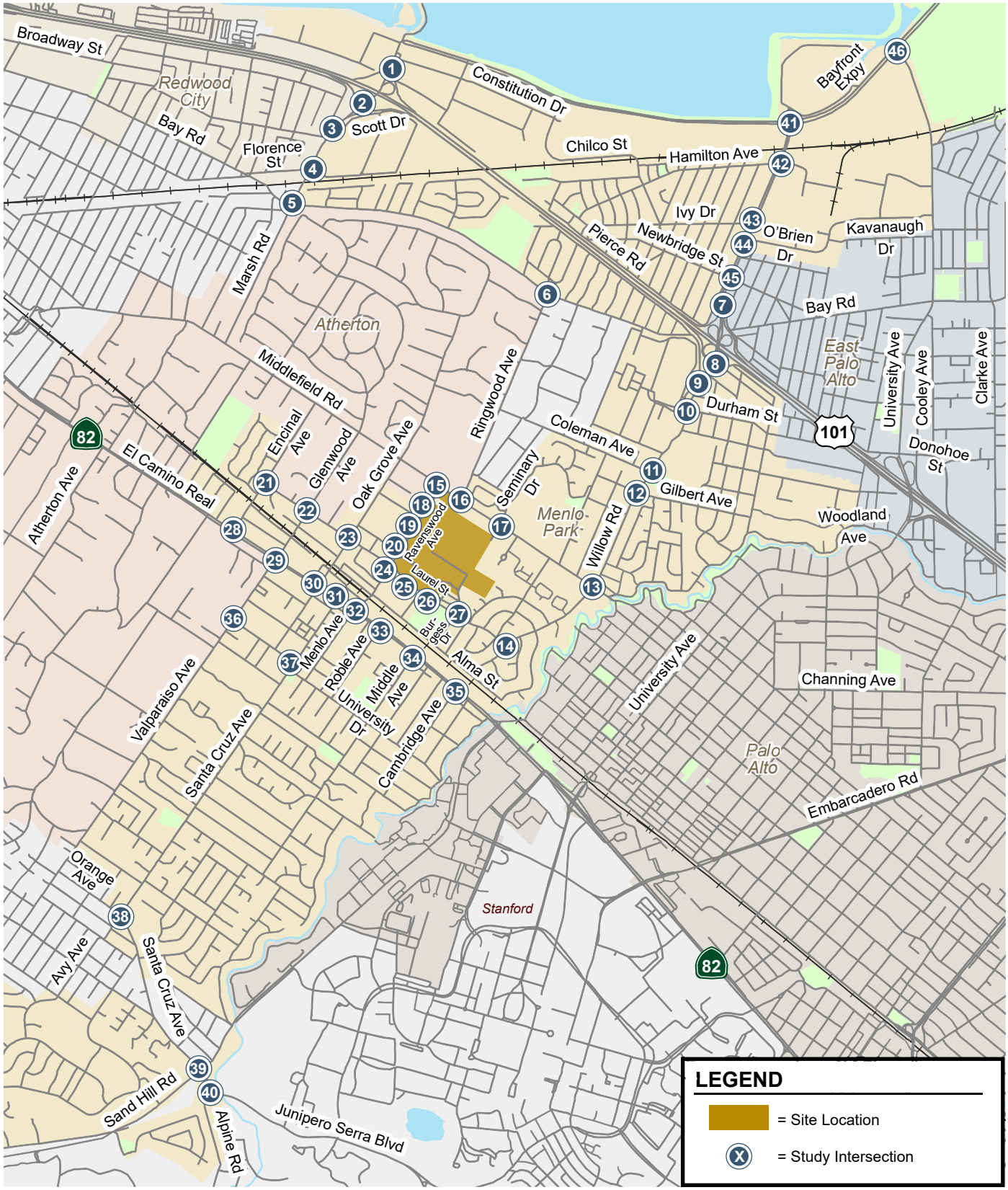


Figure 1
Site Location and Study Intersections

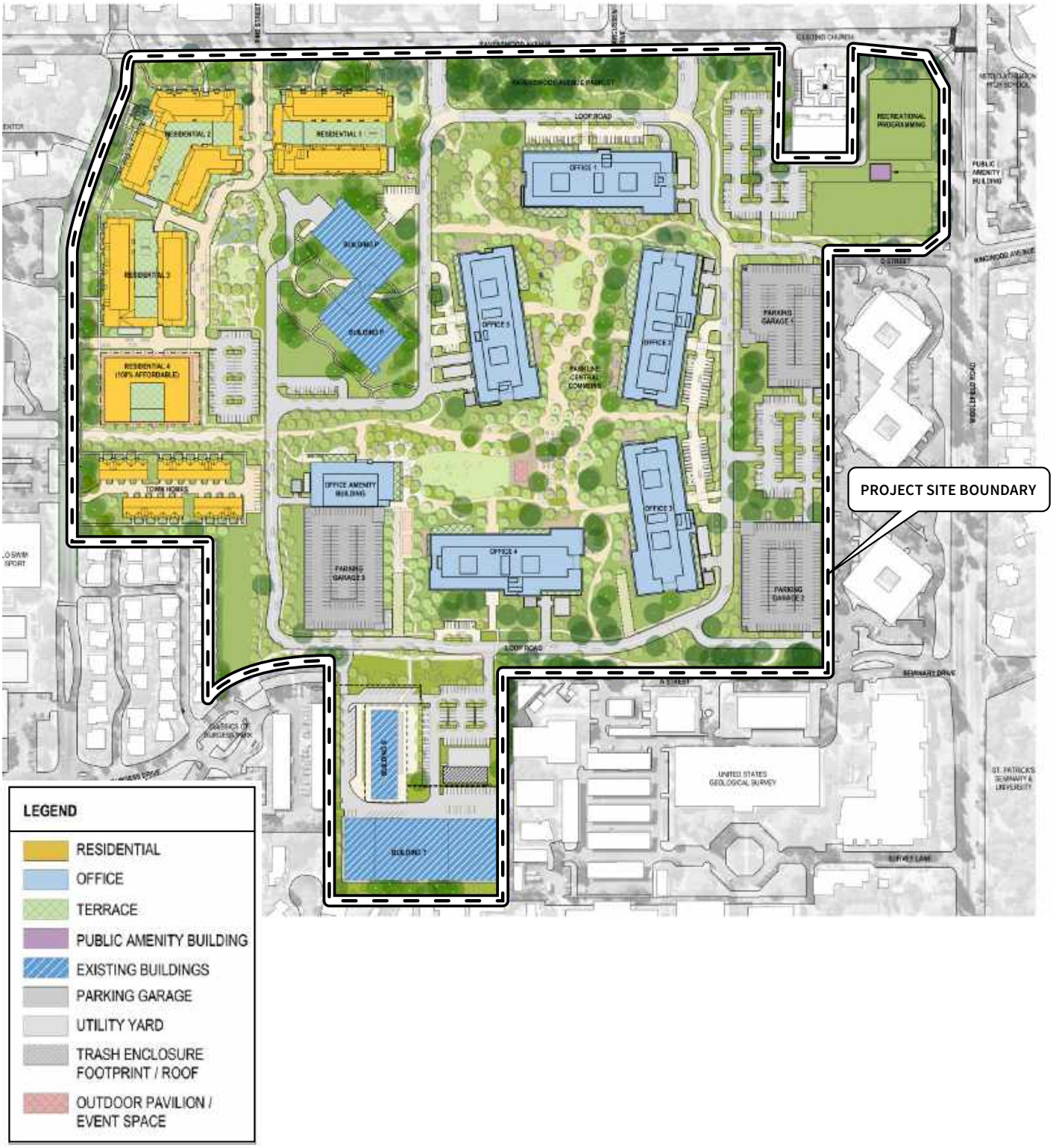


Figure 2
Project Site Plan

CEQA VMT Analysis

Per the City of Menlo Park VMT guidelines adopted in July 2020 and updated in January 2022, mixed-use projects will have each component analyzed independently against the appropriate thresholds. The Proposed Project would include office/R&D and residential land uses. OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA* recommends that VMT analysis for a mixed-use project should account for internal capture. Internal capture is defined as walking, bicycling, and tram trips between the various types of land use within the Project Site. By reducing external vehicle trips, internal capture reduces VMT for a mixed-use project in comparison to single-use developments. Each of the Proposed Project's land uses' VMT threshold of significance is listed below:

- An office/R&D project is considered to have a significant impact on VMT if the project's VMT exceeds a threshold of 15 percent below the regional average VMT per employee.
- A residential project is considered to have a significant impact on VMT if the project's VMT exceeds a threshold of 15 percent below the regional average VMT per capita.

Non-CEQA Level of Service (Roadway Congestion Analysis)

An LOS analysis was conducted to identify whether the Proposed Project would comply with local policies.

The traffic analysis is based on the AM and PM peak-hour level of service for 35 signalized intersections and 11 unsignalized intersections in the vicinity of the Project Site as illustrated in Figure 1. Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour is expected to occur between 7:00 AM and 9:00 AM, and the PM peak hour between 4:00 PM and 6:00 PM on a typical weekday. These are the hours during which most traffic congestion occurs on the roadways.

The Proposed Project would generate more than 100 peak-hour trips. The San Mateo County City/County Association of Governments (C/CAG) administers the Congestion Management Plan (CMP). Therefore, an analysis in accordance with the C/CAG CMP guidelines is included.

Study Intersections

1. US 101 Northbound Off-Ramp and Marsh Road [Caltrans]
2. US 101 Southbound Off-Ramp and Marsh Road [Caltrans]
3. Scott Drive and Marsh Road
4. Florence Street/Bohannon Drive and Marsh Road
5. Marsh Road and Bay Road
6. Bay Road and Ringwood Avenue (unsignalized)
7. US 101 Northbound Ramps and Willow Road [Caltrans]
8. US 101 Southbound Ramps and Willow Road [Caltrans]
9. Bay Road and Willow Road
10. Durham Street/Hospital Plaza and Willow Road
11. Coleman Avenue and Willow Road
12. Gilbert Avenue and Willow Road
13. Middlefield Road and Willow Road
14. Laurel Street and Willow Road (unsignalized)
15. Middlefield Road and Ravenswood Avenue
16. Middlefield Road and D Street/Ringwood Avenue
17. Middlefield Road and Seminary Drive (unsignalized)

18. Project Driveway B1 East and Ravenswood Avenue (future unsignalized intersection)
19. Project Driveway B1 West and Ravenswood Avenue (future unsignalized intersection)
20. Project Driveway/Pine Street and Ravenswood Avenue (future unsignalized intersection)
21. Laurel Street and Encinal Avenue (unsignalized)
22. Laurel Street and Glenwood Avenue (unsignalized)
23. Laurel Street and Oak Grove Avenue
24. Laurel Street and Ravenswood Avenue
25. Laurel Street and Project Driveway North (future unsignalized intersection)
26. Laurel Street and Project Driveway South (future unsignalized intersection
27. Laurel Street and Burgess Drive (unsignalized)
28. El Camino Real and Encinal Avenue
29. El Camino Real and Valparaiso Avenue/Glenwood Avenue
30. El Camino Real and Oak Grove Avenue
31. El Camino Real and Santa Cruz Avenue
32. El Camino Real and Ravenswood Avenue/Menlo Avenue
33. El Camino Real and Roble Avenue
34. El Camino Real and Middle Avenue
35. El Camino Real and Cambridge Avenue
36. University Drive and Valparaiso Avenue
37. University Drive and Santa Cruz Avenue
38. Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue (unsignalized)
39. Santa Cruz Avenue and Sand Hill Road
40. Santa Cruz Avenue/Alpine Road and Junipero Serra Boulevard
41. Bayfront Expressway and Willow Road [CMP]
42. Hamilton Avenue and Willow Road
43. Ivy Drive and Willow Road
44. O'Brien Drive and Willow Road
45. Newbridge Street and Willow Road
46. Bayfront Expressway and University Avenue [CMP]

Freeway Segments

- SR 84 – between University Avenue and Alameda County Line
- US 101 – between Santa Clara County Line and Whipple Avenue
- SR 114 (Willow Road) – between US 101 and SR 84
- SR 82 (El Camino Real) – between SR 84 and Santa Clara County Line

Freeway Ramps

US 101 & Marsh Road Interchange

- Southbound off-ramp to Marsh Road
- Southbound on-ramp from eastbound Marsh Road
- Northbound off-ramp to Marsh Road
- Northbound on-ramp from eastbound Marsh Road

US 101 & Willow Road Interchange

- Northbound off-ramp to Willow Road
- Northbound on-ramp from eastbound Willow Road
- Southbound on-ramp from eastbound Willow Road
- Southbound off-ramp to Willow Road

Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing traffic volumes at the study intersections are based on 2022/2023 traffic counts conducted for the Proposed Project and/or previous studies for other nearby developments.

Scenario 2: *Near-term (2027) Conditions.* The near-term scenario assumed a year 2027 horizon[1] and was analyzed using the model. Traffic volumes were obtained from the Menlo Park Travel Demand Model and adjusted based on existing counts and model results. In addition, traffic and roadway improvements associated with the approved developments were assumed as directed by City Staff.

Scenario 3: *Near-term (2027) plus Project Conditions.* Project-generated traffic was added to the near-term condition traffic volumes. The near-term plus project scenario was evaluated relative to the near-term scenario.

Scenario 4: *Cumulative (2040) Conditions.* 2040 model run results for the City of Menlo Park were used to describe operating conditions at the study intersections under cumulative (2040) conditions. The City has determined that the Proposed Project was included in the Year 2040 model forecasts. Therefore, the cumulative (2040) no project traffic volumes were estimated by subtracting the trips generated by the Proposed Project from the cumulative (2040) plus project traffic volumes.

Scenario 5: *Cumulative (2040) Plus Project Conditions.* The cumulative plus project scenario was analyzed using the model. The cumulative plus project scenario was evaluated relative to the cumulative scenario.

Methodology

This section presents the methods used to determine the traffic conditions at study intersections for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards and criteria used to determine if a project is compliant with local policies.

Data Requirements

The data required for the analysis were obtained from the City of Menlo Park, field observations, and previous studies. The following data were obtained from these sources:

- existing peak-hour intersection turning-movement volumes,
- existing lane configurations,
- signal timing and phasing, and
- list of approved and pending projects.

Existing counts and field observations were conducted prior to the COVID19 pandemic. No adjustments to the data were made based on pandemic conditions.

[1] 2027 is the earliest year for expected occupancy when this analysis started. The expected occupancy has since been revised to year 2031. However, as discussed in detail later in this study, there would be no substantive changes to any conclusions whether the near-term scenario is studied with a horizon year of 2027 or 2031.

Intersection Level of Service Methodologies

Traffic conditions were evaluated using level of service (LOS). Level of service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or forced-flow conditions with extreme delays.

As stated above, LOS is no longer a CEQA threshold. However, the General Plan and City's TIA Guidelines require that the TIA also analyze LOS for local planning purposes (per General Plan Program Circ-3.A Transportation Impact Metrics):

> Supplement Vehicle Miles Traveled (VMT) and greenhouse gas emissions per service population (or other efficiency metric) metrics with Level of Service (LOS) in the transportation impact review process, and utilize LOS for identification of potential operational improvements, such as traffic signal upgrades and coordination, as part of the Transportation Master Plan.

The LOS analysis would determine whether the project traffic would cause an intersection LOS to exceed the City's LOS thresholds or cause either the average delay or average critical delay to exceed the City's intersection delay thresholds under near term and cumulative conditions. The LOS and delay thresholds vary depending on the street classifications as well as whether the intersection is on a State route or not.

The City's TIA Guidelines further require an analysis of the Proposed Project in relation to relevant policies of the Circulation Element and consideration of specific measures to address noncompliance with local policies which may occur as a result of the addition of project traffic. The TIA identifies measures that could be applied as conditions of approval that would bring operations back to pre-project levels. Although not included in the TIA, an analysis may be prepared separately to determine if there are potential measures that could bring the Proposed Project into conformance with the LOS goals of Circulation Policy 3.4. Implementation of any such measures would require review and approval by City decision makers.

Macroscopic Analysis of Signalized Intersections

Traffic operations at the signalized study intersections in the City of Menlo Park were evaluated using the VISTRO software based on the level of service method described in the Highway Capacity Manual (HCM) 7th Edition. Table 1 shows the level of service definitions for signalized intersections.

Microscopic Simulation of Study Intersections

Six study intersections on Middlefield Road and Ravenswood Avenue in the immediate vicinity of the Project Site (intersections #15, #16, #17, #19, #20, and #24) were analyzed using the Synchro/SimTraffic software (version 12), see Appendix B. These site-accessing intersections would be closely spaced. Potential improvements such as signalization at certain intersections could generate queuing issues that would not be adequately reflected if intersections were studied in isolation using the VISTRO software. Unlike macroscopic models of isolated intersection operations such as the Highway Capacity Manual methodology, SimTraffic is a microscopic model that measures the full impact of queuing and blocking of intersections. This software also provides a visual animation of the traffic operations. Simulated delay values were correlated to the level of service definitions set forth in the Highway Capacity Manual (HCM) 7th Edition methodology.

The SimTraffic model was calibrated and validated to existing conditions based on existing lane geometry, existing AM and PM peak hour traffic counts, observed peak-hour vehicular queues, and the observed signal timing.

Unsignalized Intersections

Peak-hour levels of motor vehicle delay at the unsignalized study intersections in the City of Menlo Park were evaluated using the VISTRO software based on the HCM 7th Edition. With these methods, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At side-street controlled intersections (two-way or one-way stop control), the control delay (and LOS) is reported for the approach with the highest delay. For all-way stop-controlled intersections, the average delay (and LOS) for all movements is reported. Table 2 summarizes the relationship between average control delay per vehicle and LOS for unsignalized intersections.

Traffic Signal Warrant Analysis

An assessment of the need for signalization was conducted for unsignalized study intersections. For this study, the need for signalization was assessed on the basis of the peak-hour volume signal warrant (Warrant #3) described in the 2014 California Manual on Uniform Traffic Control Devices (CA MUTCD). This method provides an indication of whether traffic conditions and peak-hour traffic levels are, or would be, sufficient to justify the installation of a traffic signal. It should be noted that it is just one of the factors/warrants used to indicate whether installation of a traffic control signal is justified.

Table 1
Signalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major-contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *Highway Capacity Manual 7th Edition* (Washington, D.C., 2010)

Table 2
Unsignalized Intersection Level of Service Definition Based on Average Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Little or no traffic delay	10.0 or less
B	Short Traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

Source: Transportation Research Board, *Highway Capacity Manual 7th Edition* (Washington, D.C., 2010)

Freeway Segments

Freeway segments within the County of San Mateo are evaluated by using the volume-to-capacity (V/C) ratio method according to the City/County Association of Governments (C/CAG) CMP guidelines. The CMP specifies varying capacities be used based on the number of lanes and the free-flow travel speed. The County of San Mateo freeway segment V/C ratio is correlated to level of service as shown in Table 3.

Freeway Ramps

A freeway ramp analysis was performed in order to verify that the freeway ramps would have sufficient capacity to serve the expected traffic volumes with and without the Proposed Project. This analysis consisted of a volume-to-capacity ratio evaluation of the freeway ramps at the study interchanges. The ramp capacities were obtained from the *Highway Capacity Manual 2000,* and considered the free-flow speed, number of lanes on the ramp, and ramp metering.

Table 3
Freeway Segment Level of Service Definition

Level of Service	Description	San Mateo County [1] Maximum V/C Ratio
A	Average operating speeds at the free-flow speed generally prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	0.28
B	Speeds at the free-flow speed are generally maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high.	0.46
C	Speeds at or near the free-flow speed of the freeway prevail. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more vigilance on the part of the driver.	0.67
D	Speeds begin to decline slightly with increased flows at this level. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels.	0.85
E	At this level, the freeway operates at or near capacity. Operations in this level are volatile, because there are virtually no usable gaps in the traffic stream, leaving little room to maneuver within the traffic stream.	1
F	Vehicular flow breakdowns occurs. Large queues form behind breakdown points.	greater than 1

Source:
1. City/County Association of Governments of San Mateo County, Final San Mateo County Congestion Management Program 2021, Table B-1 (65 mph free-flow speed).

Level of Service Standards and Adverse Effect Criteria

City of Menlo Park Definition of Adverse Effect

The following thresholds are from the City of Menlo Park's TIA Guidelines and the Proposed Project's compliance with local policies was evaluated based on these thresholds.

- A project is considered potentially noncompliant with local policies if the addition of project traffic causes an intersection on a collector street operating at LOS "A" through "C" to operate at an unacceptable level (LOS "D," "E" or "F") or have an increase of 23 seconds or greater in average vehicle delay, whichever comes first. Potential noncompliance shall also include a project that causes an intersection on arterial streets or local approaches to State controlled signalized intersections operating at LOS "A" through "D" to operate at an unacceptable level (LOS "E" or "F") or have an increase of 23 seconds or greater in average vehicle delay, whichever comes first.
- A project is also considered potentially noncompliant if the addition of project traffic causes an increase of more than 0.8 seconds of average delay to vehicles on all critical movements for

intersections operating at a near-term LOS "D" through "F" for collector streets and at a near-term LOS "E" or "F" for arterial streets. For local approaches to State controlled signalized intersections, a project is considered to be potentially noncompliant if the addition of project traffic causes an increase of more than 0.8 seconds of delay to vehicles on the most critical movements for intersections operating at a near-term LOS "E" or "F."

State (Caltrans) Controlled Intersection Definition of Adverse Effect

For signalized intersections involving two state routes, the Proposed Project is considered potentially non-compliant with local policies if for any peak hour:

- The level of service degrades from an acceptable LOS D or better under existing conditions to an unacceptable LOS E or F under existing plus project conditions, and the average delay per vehicle increases by four seconds or more, or
- The level of service is an unacceptable LOS E or F under existing conditions and the addition of project trips causes an increase in the average control delay at the intersection by four seconds or more.

Unsignalized Intersection Definition of Adverse Effect

At an unsignalized intersection, the Proposed Project is considered to have an adverse effect if it:

- Causes operations to degrade from LOS D or better to LOS E or F; or
- Exacerbates LOS E or F conditions by increasing control delay by five or more seconds; and
- Causes volumes under project conditions to exceed the Caltrans Peak-Hour Volume Warrant Criteria.

Intersection Vehicle Queuing Analysis

For selected high-demand movements at the study intersections, the estimated maximum vehicle queues were compared to the existing or planned storage capacity. The queuing analysis is used to determine the appropriate storage lengths for the high-demand turn lanes where the Proposed Project would add a substantial number of trips to these movements. Vehicle queues were estimated using VISTRO for intersections analyzed with this software.

The basis of the analysis is as follows: (1) VISTRO is used to estimate the 95th percentile maximum number of queued vehicles per signal cycle for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement.

For signalized intersections, the 95th percentile queue length value indicates that during the peak hour, a queue of this length or less would occur on 95th percent of the signal cycles. In other words, a queue length larger than the 95th percentile queue would only occur on five percent of the signal cycles (about three cycles during the peak hour for a signal with a 60-second cycle length). Therefore, left-turn storage pocket designs based on the 95th percentile queue length would ensure that storage space would be exceeded only five percent of the time. The 95th percentile queue length is also known as the "design queue length."

2. CEQA VMT Analysis

Project VMT is defined as the total distance traveled by vehicles traveling to and from the Proposed Project over a typical day. In order to estimate VMT for the various land use components, the citywide travel demand forecast model was used. The citywide model is the best available model to represent travel within the City of Menlo Park, and serves as the primary forecasting tool for the City. The model is a mathematical representation of travel within the nine Bay Area counties, as well as the Santa Cruz, San Benito, Monterey and San Joaquin counties. The base model structure was developed by the Metropolitan Transportation Commission (MTC) and further refined by the City/County Association of Governments and Santa Clara Valley Transportation Authority for use within San Mateo County and Santa Clara County. The City further refined this model for application with Menlo Park to add more detail to the zone structure and transportation network. The model has a base year of year 2019.

There are four main components of the model: 1) trip generation, 2) trip distribution, 3) mode choice, and 4) trip assignment. The model uses socioeconomic inputs (i.e., population, income, employment) aggregated into geographic areas, called transportation analysis zones (TAZ) to estimate travel within the model area. There are 81 TAZs within the model to represent the City of Menlo Park. The model was used to estimate the Proposed Project's effect on VMT in accordance with the City's VMT guidelines.

VMT Evaluation

According to the City's VMT guidelines, office/R&D land use is evaluated based on a daily VMT per employee metric, which would be the same whether the land use is office or R&D. Using the model, this metric is calculated only for home-based work trips, per OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA. Based on the latest citywide travel demand model, the regional average office/R&D VMT is 15.9 per employee. Therefore, City's office/R&D VMT impact threshold, at 15% below regional average, would be 13.6 daily VMT per employee.

According to City's VMT guidelines, the evaluation of residential land use is based on a daily VMT per capita metric. Using the model, this metric is calculated only for home-based trips, per OPR's technical advisory. Based on the latest citywide travel demand model, regional average residential VMT is 13.1 per capita. Therefore, the City's residential VMT impact threshold, at 15% below regional average, would be 11.2 daily VMT per capita.

The travel demand model calculated the daily VMT per employee to be 17.9 for the office/R&D component of the project, which is above the threshold of 13.6. However, the model does not account for the project's internalization. The Proposed Project would include office/R&D and residential land uses. OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA* recommends that VMT analysis for a mixed-use project should account for internal capture. Internal capture is defined as

walking and bicycling trips between the various types of land use within the Project Site. As discussed in Chapter 3 below, the Proposed Project's daily internalization is estimated at 4.7 percent.

The model also does not fully account for the project's Transportation Demand Management (TDM) plan. Menlo Park will require a TDM plan for the office/R&D component of the project that achieves a 28% trip reduction from standard ITE trip generation rates. Therefore, the model VMT estimate of 17.9 daily VMT per employee needs to be adjusted downward to accurately represent the Proposed Project.

Per the Institute of Transportation Engineers (ITE) *Trip Generation Handbook, 3rd Edition (p38)*, ITE's trip generation rates reflect a drive-alone mode share of 95 percent. For the proposed office/R&D uses, the required 28% TDM reduction plus internalization will reduce the drive alone mode share to 65.2% [(1-5% of inherent non-driving mode) * (1-4.7% of internalization) * (1-28% of TDM reduction) = 65.2%]. The model estimated the drive-alone mode share for the office/R&D component of the project to be 86.4%. Thus, the model-calculated VMT per employee of 17.9 can be reduced by 24.5% (1 – 65.2%/86.4% = 24.5%) to arrive at an estimate of 13.5 daily home-based VMT per employee (13.5 = 17.9 * [1-24.5%]) after accounting for the internalization and the required TDM plan.

For the residential component, the travel demand model calculated the residential VMT at 11.1 home-based VMT per resident. However, as with the office/R&D component, this doesn't account for internalization or the TDM plan. Menlo Park will require a TDM plan to achieve a 25% reduction from ITE rates for the residential component. For the proposed residential uses, the 25% TDM reduction from gross ITE trip generation (after crediting internalization) is equivalent to a drive alone mode share of 67.9% [(1-5% of inherent non-driving mode) * (1-4.7% of internalization) * (1-25% of TDM reduction) = 67.9%] The model estimated the residential component's drive alone mode share at 77.3%. Since the residential component with the TDM plan reductions would have a drive alone mode share of 67.9%, the model-estimated drive alone mode share was reduced by 12.2% (1 – 67.9%/77.3% = 12.2%). As a result, the proposed residential component of the project would have 9.7 home-based VMT per resident (9.7 = 11.1 * [1-12.2%]).

As shown in Table 4, the Proposed Project's residential and office/R&D land uses would generate VMT below the City's respective VMT impact thresholds and would thus not have a VMT impact.

Table 4
Office/R&D and Residential VMT Evaluation

Land Use	Regional Average	VMT Threshold	Project VMT [3]	VMT Impact
Office/R&D [1]	15.9	13.6	13.5	No
Residential [2]	13.1	11.2	9.7	No

Notes:
** All data referenced the latest Menlo Park citywide travel demand forecast model.*
1. VMT for office/R&D land use is reported in VMT per employee.
2. VMT for residential land use is reported in VMT per capita.
3. Project VMT accounted for implementation of a TDM Plan with 28% trip reduction target for the office/R&D land use, and 25% trip reduction target for the residential land use.

Impacts on Pedestrian, Bicycle and Transit Facilities

The Proposed Project is consistent with all applicable pedestrian, bicycle and transit related plans, ordinances and policies, as listed below:

- City of Menlo Park Circulation Element of the General Plan

- City of Menlo Park Municipal Code, Sections 16.43.100 and 16.45.090
- City of Menlo Park Transportation Master Plan
- City of Menlo Park Transportation Impact Fee

Pedestrian and Bicycle Facilities

The Proposed Project proposes multiple pedestrian and bicycle connections between the Project Site and the surrounding roadway network and within the Project Site:

- Class I multi-use path along the Project Site frontage on Ravenswood Avenue
- Class I multi-use path connecting Laurel Street and the Loop Road north of the proposed townhomes
- Class I multi-use path along the southern project boundary, and transitions into a Class II or Class III bicycle facility running along Burgess Drive west to Laurel
- Class II bicycle lanes along all roadways inside the Project Site
- Class IV bicycle facility along Laurel Street from Burgess Drive to Ravenswood Avenue

The details of these proposed designs have not been finalized yet. Prior to final design, the Project Sponsor shall coordinate with City staff to ensure the proposed pedestrian and bicycle facilities are designed to appropriate standards. The proposed multimodal improvements would represent an overall improvement to the walking and biking facilities in the immediate project vicinity.

Menlo Park's Traffic Impact Fee (TIF) program also proposes the following bicycle and pedestrian facilities in the immediate vicinity of the Project Site which would improve connections between the Project Site and the surrounding neighborhoods. It should be noted that these improvements are not part of the Proposed Project. Their implementations are contingent on numerous factors such as funding availability, and project prioritization.

- Class II bike lanes on Laurel Street between Burgess Street and Willow Road
- Class III bike route on Seminary Drive between Middlefield Road and Santa Monica Avenue
- Class III bike route on Santa Monica Avenue between Middlefield Road and Coleman Avenue
- Class III bike route on Linfield Drive between Waverley Street to Laurel Street
- Class III bike route on Alma Street between Oak Grove Avenue and Ravenswood Avenue
- Intersection improvements at Middlefield Road and Ravenswood Avenue – Remove eastbound channelizing island, install crosswalk and cross-bike markings in north leg, and install bike signal.
- Intersection improvements at Middlefield Road and Ringwood Avenue – Remove southbound channelizing island, reconstruct crosswalks in north and west legs, and install two-stages queue boxes for southbound left-turn cyclists.
- Ravenswood Caltrain Crossing

Pedestrian and Bicycle Access to Schools

Schools in the immediate vicinity of the Project Site include Nativity Catholic School, Menlo-Atherton High School, Lydian Academy, Encinal Elementary School, Menlo School, and Laurel Elementary School. Bicycle and pedestrian access to each school is described below:

- **Nativity Catholic School.** This school is located approximately 0.3 miles north of the residential site at the northeast corner of Laurel Street and Oak Grove Avenue. Pedestrian and bicycle

access from the Project Site to the school would be via Laurel Street, which has continuous sidewalks and existing Class II bicycle lanes on both sides of the road.

- **Menlo-Atherton High School.** This school is located approximately 0.6 mile east of the residential site at the east side of the Middlefield Road/Ravenswood Avenue intersection. Pedestrian and bicycle access from the Project Site to the school would be via Ravenswood Avenue, which has continuous sidewalks and existing Class II bicycle lanes.
- **Lydian Academy.** This school is located approximately 0.5 mile west of the residential site. Pedestrian and bicycle access from the Project Site to the school would be via Ravenswood Avenue and El Camino Real. There are continuous sidewalks along both streets. Ravenswood Avenue has Class II bicycle lanes between Middlefield Road and El Camino Real. There are no designated bicycle facilities on El Camino Real.
- **Encinal Elementary School.** This school is located approximately one mile north of the residential site at the northwest corner of Middlefield Road and Encinal Avenue. Pedestrian and bicycle access from the Project Site to the school would be via Laurel Street and Encinal Avenue or via Ravenswood Avenue and Middlefield Road. Both routes Class II bicycle lanes on both sides of the road. This section of Middlefield Road is primarily in Atherton, and does not provide continuous sidewalks.
- **Menlo School.** This school is located approximately one mile northwest of the residential site on Valparaiso Avenue. Pedestrian and bicycle access from the Project Site to the school would be via Laurel Street, Glenwood Avenue, and Valparaiso Avenue, which have continuous sidewalks and existing Class II bicycle lanes on both sides of these roads.
- **Laurel Elementary School.** This school is located approximately one mile east of the residential site on Ringwood Avenue. Pedestrian and bicycle access from the Project Site to the school would be via Ravenswood Avenue, Middlefield Road, and Ringwood Avenue. Ravenswood Avenue and Middlefield Road have continuous sidewalks and Class II bicycle lanes on both sides of the roads. Ringwood Avenue has Class II bicycle lanes on both sides of the road. There are sidewalks on the north side of Ringwood Avenue.

Transit Facilities

The Proposed Project is located within walking and bicycle distance to the Menlo Park Caltrain station. The Proposed Project is expected to generate an increase in transit demand, which could be accommodated by the available capacity of the SamTrans bus service. The SamTrans routes 81, 82, 83, 296, 397, ECR, M1 Crosstown Shuttle, M3 Marsh Road Shuttle, and M4 Willow Road shuttle serve the immediate vicinity of the Project Site during the AM and PM peak commute hours. Bus stops are within a typical walking distance (one-quarter mile or 5 minutes) of the Project Site. The Proposed Project would make no change to existing public transit facilities.

However, by adding vehicle trips and increasing delays at intersections along bus routes, it would increase bus travel time. Intersection improvements to reduce intersection delay as discussed in this report would help to reduce some bus delay along these routes.

The Caltrain electrification project would enable Caltrain to provide more frequent train service at the Menlo Park, Palo Alto, and Redwood City Caltrain stations. Caltrain predicts an initial capacity increase of over 30%. It is expected that the Caltrain electrification project would accommodate the potential increase in transit ridership generated by the Proposed Project.

3. Non-CEQA Level of Service Transportation Analysis

This chapter describes the existing conditions level of service and observed traffic conditions at roadway facilities in the vicinity of the site. It also describes the method by which project traffic is estimated and any adverse effects to intersection levels of service caused by the Proposed Project under existing, near-term (2027), cumulative (2040), and cumulative (2040) with Dumbarton rail conditions.

Existing Intersection Lane Configurations and Traffic Volumes

The existing lane configurations at the study intersections were confirmed by observations in the field and are shown on Figure 3. Existing traffic volumes were obtained from new peak-hour counts collected in year 2022 and year 2023. The existing AM and PM peak hour intersection volumes are shown in Figure 4. Intersection turning-movement count data are presented in Appendix A.

At the time that the counts and field observations were conducted, Middlefield Road had two northbound lanes at the intersection of Seminary Drive, which is reflected in the existing conditions analysis. However, the city recently restriped Middlefield Road to consist of one northbound lane at the intersection of Middlefield Road and Seminary Drive, which is reflected in the near-term conditions analysis.

Existing Intersection Levels of Service

The results of the intersection level-of-service analysis under existing conditions show that the following study intersections currently operate at an unacceptable level of service during at least one peak hour (see Table 5 and Figure 5):

7. US 101 Northbound Ramps and Willow Road (PM peak hour)
41. Bayfront Expressway and Willow Road (PM peak hour)
42. Hamilton Avenue and Willow Road (PM peak hour)
44. O'Brien Drive and Willow Road (PM peak hour)
45. Newbridge Street and Willow Road (AM and PM peak hours)
46. Bayfront Expressway and University Avenue (PM peak hour)

As described in Chapter 1, the existing traffic operations for the study intersections #15, #16, #17, #19, #20, and #24 on Middlefield Road and Ravenswood Avenue are based on the results of the SimTraffic micro-simulation analysis, which show that the six study intersections currently operate at acceptable conditions during both peak hours. The micro-simulation methodology, assumptions, and analysis results are documented in Appendix B. The intersection level of service calculation sheets for the intersection analyzed using the VISTRO software are included in Appendix C.

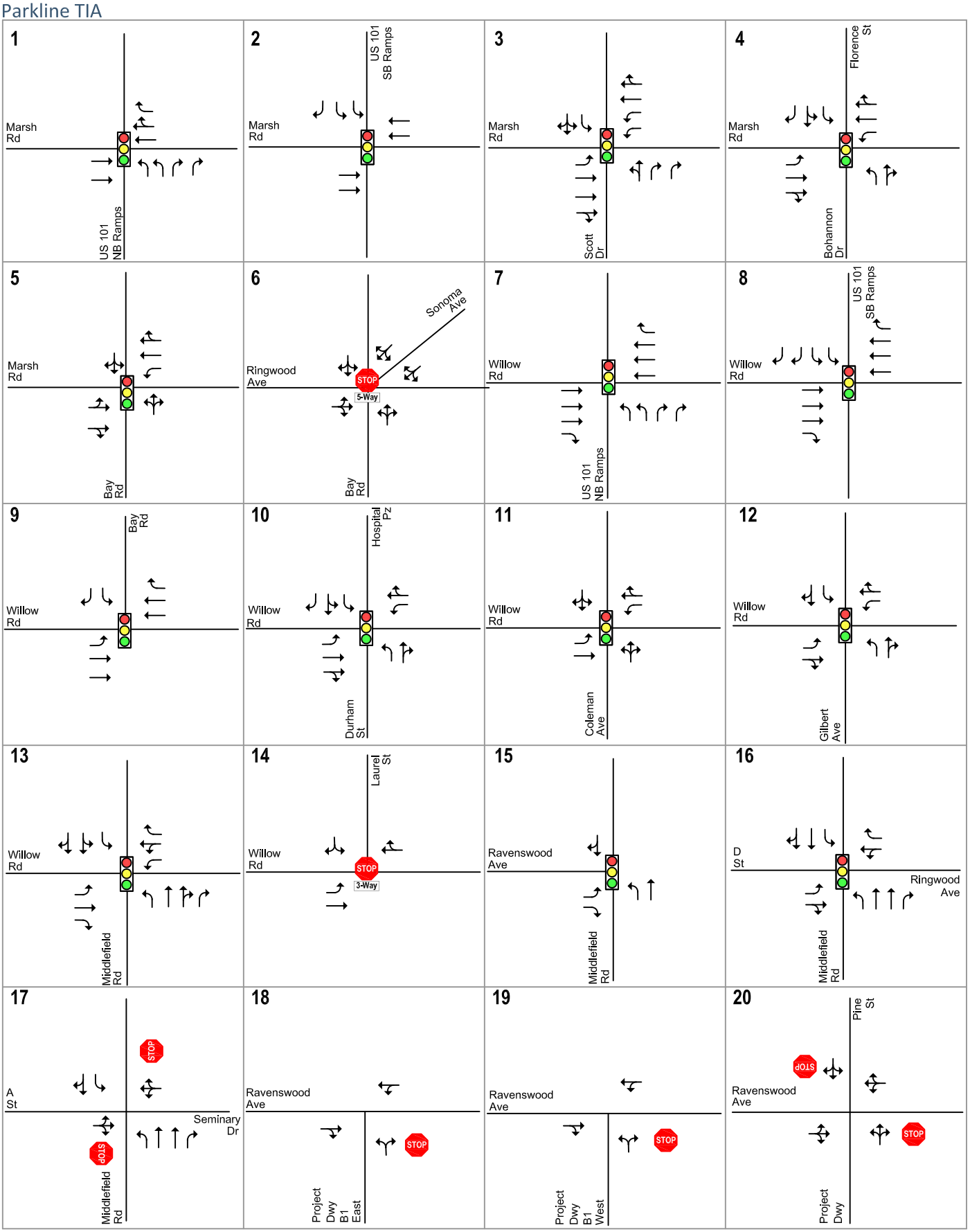


Figure 3
Existing Lane Configurations

NORTH
Not to Scale

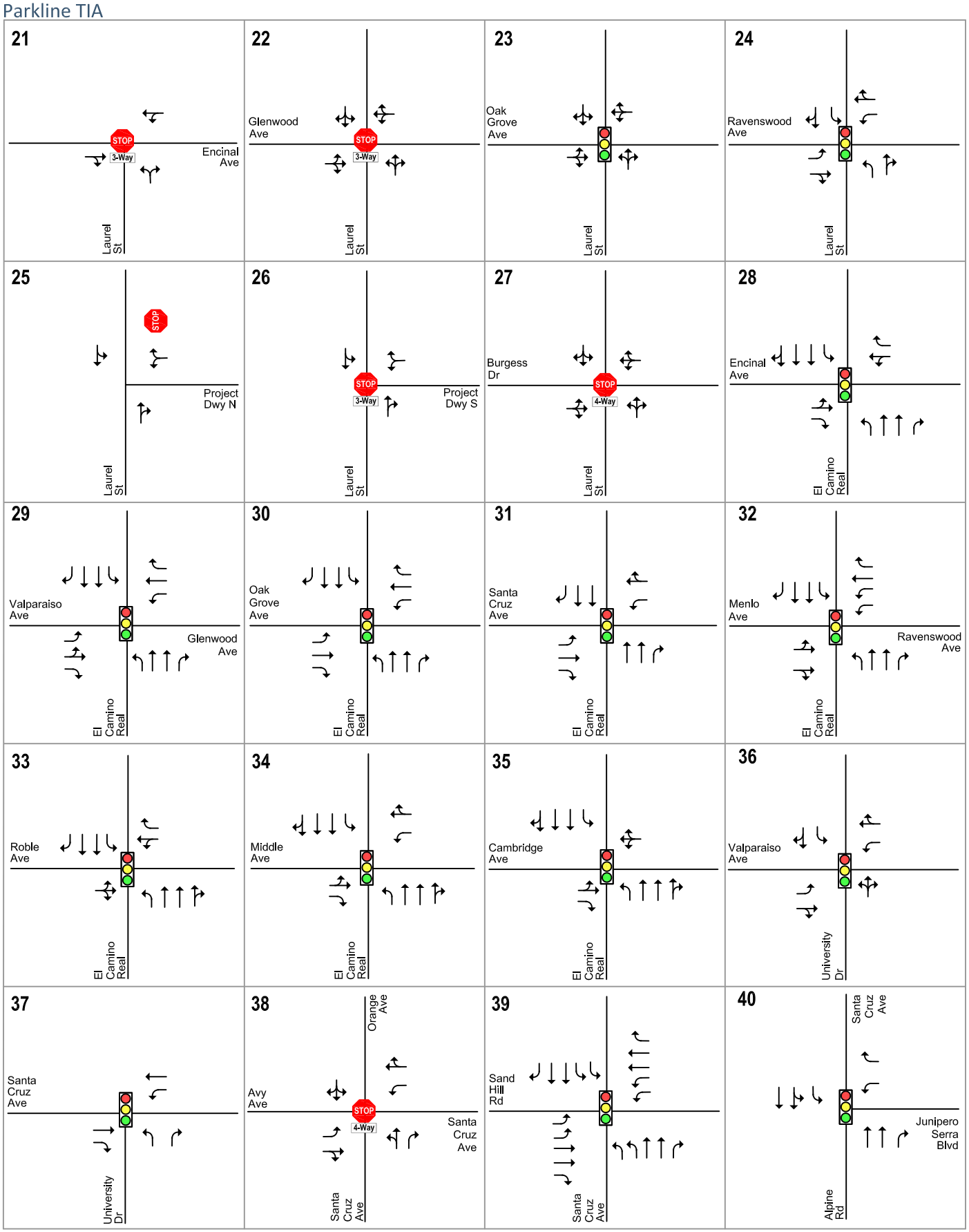
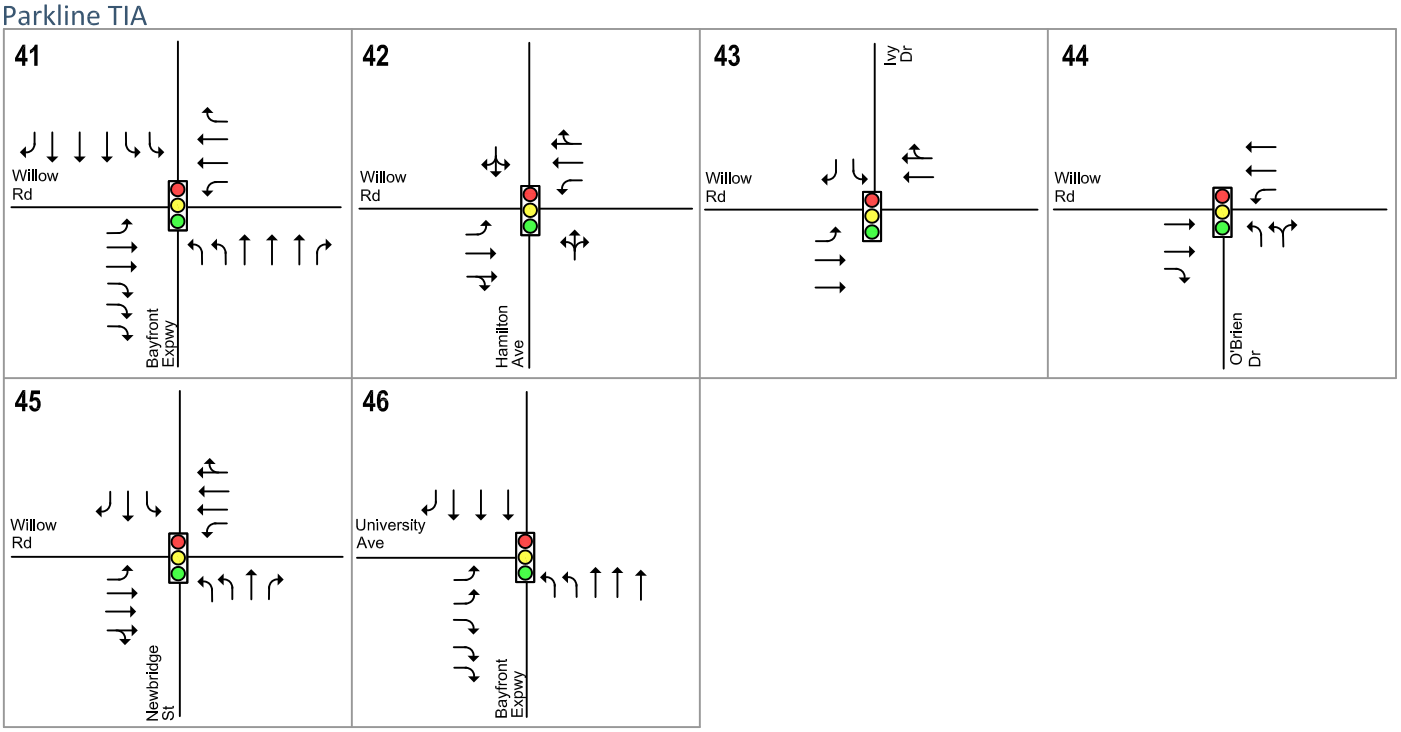


Figure 3
Existing Lane Configurations



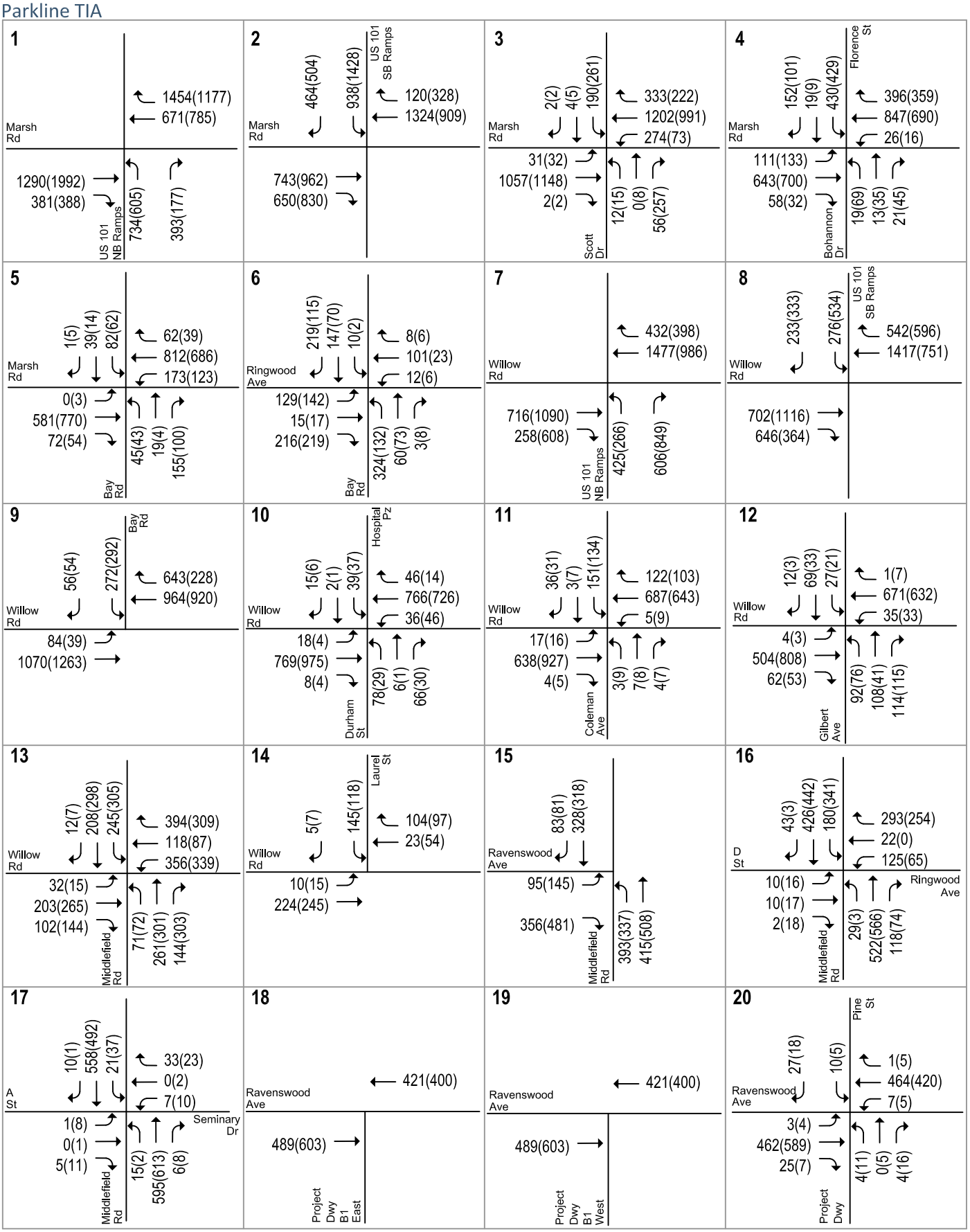
LEGEND

STOP = Stop Controlled Approach

STOP 4-Way = Stop Controlled Intersection

= Signalized Intersection

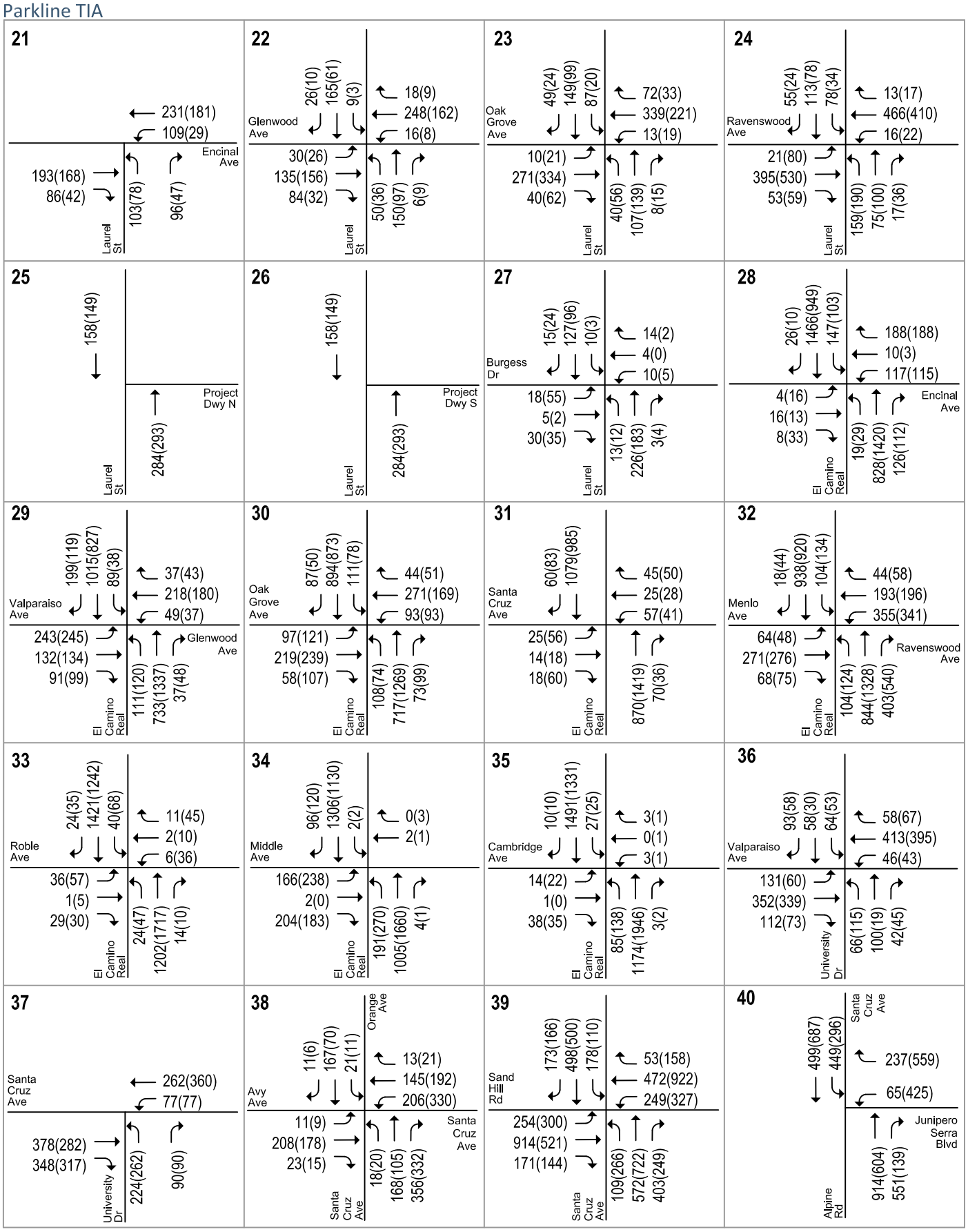
Figure 3
Existing Lane Configurations



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

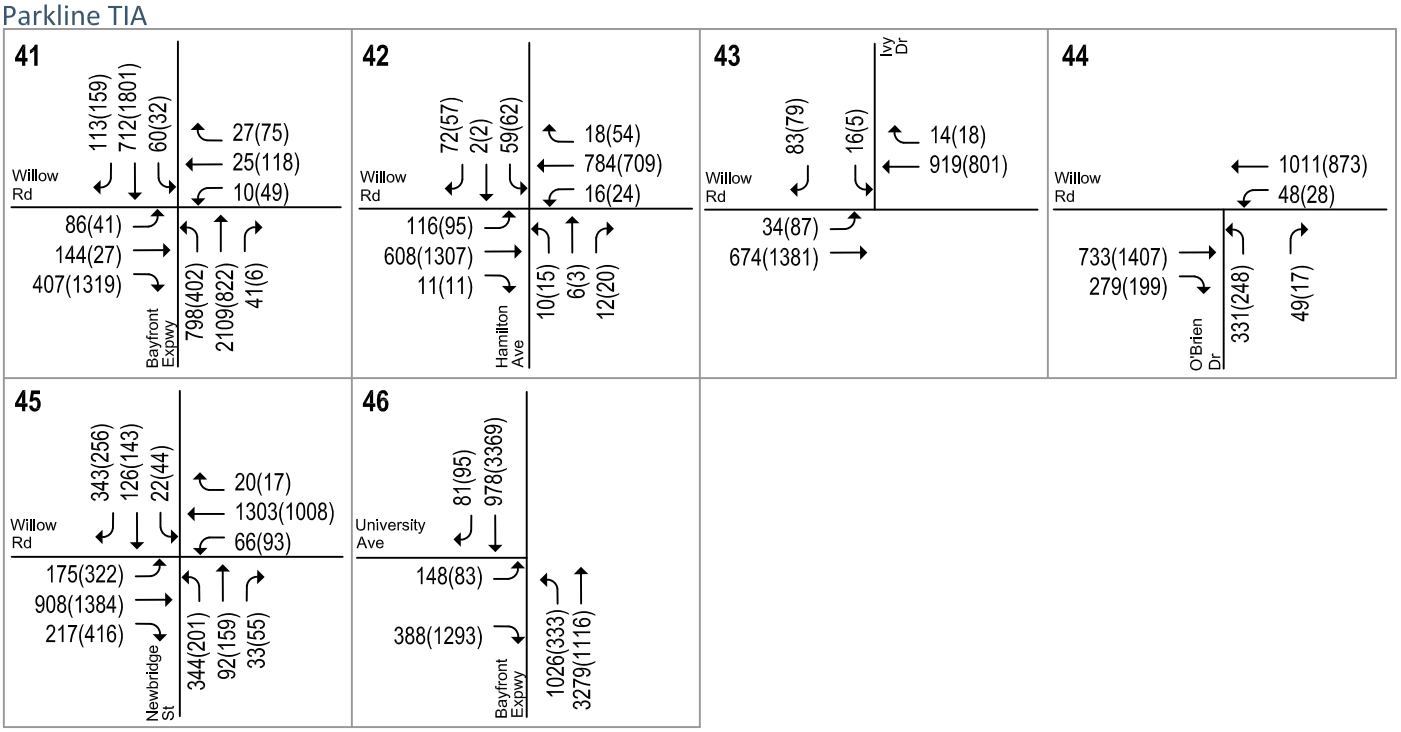
Figure 4
Existing Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 4
Existing Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 4
Existing Traffic Volumes

Table 5
Existing Intersection Levels of Service

#	Intersection	Peak Hour	Count Date	GP Policy Standard	Traffic Control	Existing Conditions Avg. Delay (sec)[1]	Existing Conditions LOS
1	US 101 NB Off-Ramp & Marsh Rd	AM	12/15/2022	D	Signal	15.9	B
		PM	12/15/2022			18.8	B
2	US 101 SB Off-Ramp & Marsh Rd	AM	12/15/2022	D	Signal	20.6	C
		PM	12/15/2022			22.4	C
3	Scott Dr & Marsh Rd	AM	12/1/2022	D	Signal	22.5	C
		PM	12/1/2022			23.9	C
4	Florence St/Bohannon Dr & Marsh Rd	AM	12/1/2022	D	Signal	30.2	C
		PM	12/1/2022			30.8	C
5	Bay Rd & Marsh Rd	AM	12/1/2022	D	Signal	15.3	B
		PM	12/1/2022			17.6	B
6	Bay Rd & Ringwood Ave	AM	12/8/2022	C	AWSC	28.5	D
		PM	12/8/2022			12.0	B
7	US 101 NB Ramps & Willow Rd (SR 114)	AM	11/10/2022	D	Signal	14.1	B
		PM	11/10/2022			**100.0**	**F**
8	US 101 SB Ramps & Willow Rd (SR 114)	AM	11/10/2022	D	Signal	10.1	B
		PM	11/10/2022			19.8	B
9	Bay Rd & Willow Rd	AM	11/10/2022	D	Signal	52.0	D
		PM	11/10/2022			9.9	A
10	Durham St & Willow Rd	AM	11/10/2022	D	Signal	26.7	C
		PM	11/10/2022			13.1	B
11	Coleman Ave & Willow Rd	AM	11/10/2022	D	Signal	13.7	B
		PM	11/10/2022			12.7	B
12	Gilbert Ave & Willow Rd	AM	11/10/2022	D	Signal	14.6	B
		PM	11/10/2022			11.5	B
13	Middlefield Rd & Willow Rd	AM	12/8/2022	D	Signal	50.5	D
		PM	12/8/2022			52.9	D
14	Laurel St & Willow Rd	AM	5/2/2023	C	AWSC	9.9	A
		PM	5/2/2023			9.7	A
15	Middlefield Rd & Ravenswood Ave [2]	AM	5/24/2023	D	Signal	39.0	D
		PM	5/24/2023			30.0	C
16	Middlefield Rd & D St/Ringwood Ave [2]	AM	5/24/2023	D	Signal	34.5	C
		PM	5/24/2023			28.0	C
17	Middlefield Rd & Seminary Dr [2]	AM	5/24/2023	D	TWSC	9.9	A
		PM	5/24/2023			12.1	B
18	Proj Dwy B1 E & Ravenswood Ave [2]	AM	--	D	Signal	Project Dwy	
		PM	--				
19	Proj Dwy B1 West & Ravenswood Ave [2]	AM	--	D	TWSC	Project Dwy	
		PM	--				
20	Proj Dwy/Pine St & Ravenswood Ave [2]	AM	5/24/2023	D	TWSC	17.3	C
		PM	5/24/2023			23.5	C

Table 5 (Continued)
Existing Intersection Levels of Service

#	Intersection	Peak Hour	Count Date	GP Policy Standard	Traffic Control	Existing Conditions Avg. Delay (sec)[1]	Existing Conditions LOS
21	Laurel St & Encinal Ave	AM	4/18/2023	C	AWSC	14.9	B
		PM	4/18/2023			9.3	A
22	Laurel St & Glenwood Ave	AM	4/18/2023	C	AWSC	22.8	C
		PM	4/18/2023			9.6	A
23	Laurel St & Oak Grove Ave	AM	3/2/2023	C	Signal	18.9	B
		PM	3/2/2023			13.3	B
24	Laurel St & Ravenswood Ave [2]	AM	5/24/2023	C	Signal	30.2	C
		PM	5/24/2023			47.9	D
25	Laurel St & Proj Dwy N	AM	--	C	TWSC	0.0	A
		PM	--			0.0	A
26	Laurel St & Proj Dwy S	AM	--	C	TWSC	8.7	A
		PM	--			8.8	A
27	Laurel St & Burgess Dr	AM	5/2/2023	C	AWSC	8.9	A
		PM	5/2/2023			8.8	A
28	El Camino Real & Encinal Ave	AM	3/2/2023	D	Signal	52.7	D
	Menlo College Northbound					*47.0*	*D*
	Encinal Ave Southbound					***>120***	***F***
		PM	3/2/2023		Signal	30.0	C
	Menlo College Northbound					*40.2*	*D*
	Encinal Ave Southbound					***>120***	***F***
29	El Camino Real & Glenwood Ave	AM	3/2/2023	D	Signal	32.9	C
	Valparaiso Ave Northbound					***60.9***	***E***
	Glenwood Ave Southbound					***61.4***	***E***
		PM	3/2/2023		Signal	29.9	C
	Valparaiso Ave Northbound					***64.1***	***E***
	Glenwood Ave Southbound					***67.8***	***E***
30	El Camino Real & Oak Grove Ave	AM	3/2/2023	D	Signal	33.7	C
	Oak Grove Ave Northbound					***55.7***	***E***
	Oak Grove Ave Southbound					***66.3***	***E***
		PM	3/2/2023		Signal	23.9	C
	Oak Grove Ave Northbound					***68.6***	***E***
	Oak Grove Ave Southbound					***74.1***	***E***
31	El Camino Real & Santa Cruz Ave	AM	3/2/2023	D	Signal	5.8	A
	Santa Cruz Ave Northbound					***64.5***	***E***
	Santa Cruz Ave Southbound					***68.2***	***E***
		PM	3/2/2023		Signal	7.2	A
	Santa Cruz Ave Northbound					***72.0***	***E***
	Santa Cruz Ave Southbound					***73.9***	***E***

Table 5 (Continued)
Existing Intersection Levels of Service

#	Intersection	Peak Hour	Count Date	GP Policy Standard	Traffic Control	Existing Conditions Avg. Delay (sec)[1]	Existing Conditions LOS
32	El Camino Real & Ravenswood Ave	AM	3/2/2023	D	Signal	39.9	D
	Menlo Ave Northbound					***81.2***	***F***
	Ravenswood Ave Southbound					***59.9***	***E***
		PM	3/2/2023		Signal	32.7	C
	Menlo Ave Northbound					***66.2***	***E***
	Ravenswood Ave Southbound					***56.0***	***E***
33	El Camino Real & Roble Ave	AM	3/2/2023	D	Signal	4.3	A
	Roble Ave Northbound					***69.1***	***E***
	Roble Ave Southbound					***63.6***	***E***
		PM	3/2/2023		Signal	7.2	A
	Roble Ave Northbound					***71.9***	***E***
	Roble Ave Southbound					***62.5***	***E***
34	El Camino Real & Middle Ave	AM	3/2/2023	D	Signal	15.7	B
	Middle Ave Northbound					***64.3***	***E***
		PM	3/2/2023		Signal	18.2	B
	Middle Ave Northbound					***62.2***	***E***
35	El Camino Real & Cambridge Ave	AM	3/2/2023	D	Signal	5.1	A
	Cambridge Ave Northbound					***64.6***	***E***
		PM	3/2/2023		Signal	5.7	A
	Cambridge Ave Northbound					***69.2***	***E***
36	University Dr & Valparaiso Ave	AM	3/2/2023	D	Signal	15.3	B
		PM	3/2/2023			13.4	B
37	University Dr & Santa Cruz Ave	AM	3/2/2023	D	Signal	9.7	A
		PM	3/2/2023			9.5	A
38	Orange Ave/Santa Cruz Ave/Avy Ave	AM	3/16/2023	D	AWSC	18.1	C
		PM	3/16/2023			19.1	C
39	Santa Cruz Ave & Sand Hill Rd	AM	3/16/2023	D	Signal	46.4	D
		PM	3/16/2023			41.0	D
40	Santa Cruz Ave & Junipero Serra Blvd	AM	3/16/2023	D	Signal	35.9	D
		PM	3/16/2023			38.6	D
41	Bayfront Expwy & Willow Rd (SR 114)*	AM	11/10/2022	D	Signal	18.1	B
		PM	11/10/2022			**116.4**	**F**
42	Hamilton Ave & Willow Rd (SR 114)	AM	11/10/2022	D	Signal	15.3	B
	Hamilton Ave Northbound					*29.9*	*C*
	Hamilton Ave Southbound					*35.9*	*D*
		PM	11/10/2022		Signal	**72.3**	**E**
	Hamilton Ave Northbound					*45.2*	*D*
	Hamilton Ave Southbound					*58.0*	*E*
43	Ivy Dr & Willow Rd (SR 114)	AM	11/10/2022	D	Signal	18.7	B
	Ivy Dr Southbound					***81.0***	***F***
		PM	11/10/2022		Signal	42.3	D
	Ivy Dr Southbound					***69.7***	***E***

Table 5 (Continued)
Existing Intersection Levels of Service

#	Intersection	Peak Hour	Count Date	GP Policy Standard	Traffic Control	Existing Conditions Avg. Delay (sec)[1]	Existing Conditions LOS
44	O'Brien Dr & Willow Rd (SR 114)	AM	11/10/2022	D	Signal	25.2	C
	O'Brien Dr Northbound					***87.0***	***F***
		PM	11/10/2022		Signal	**>120**	**F**
	O'Brien Dr Northbound					***>120***	***F***
45	Newbridge St & Willow Rd (SR 114)	AM	11/10/2022	D	Signal	**>120**	**F**
	Bay Rd Northbound					***61.8***	***E***
	Newbridge St Southbound					***>120***	***F***
		PM	11/10/2022		Signal	**>120**	**F**
	Bay Rd Northbound					*43.8*	*D*
	Newbridge St Southbound					***66.9***	***E***
46	Bayfront Expwy & University Ave*	AM	2/16/2023	D	Signal	15.5	B
		PM	2/16/2023			**86.8**	**F**

Notes:

* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control; GP - General Plan

[1] Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

Bold indicates substandard level of service

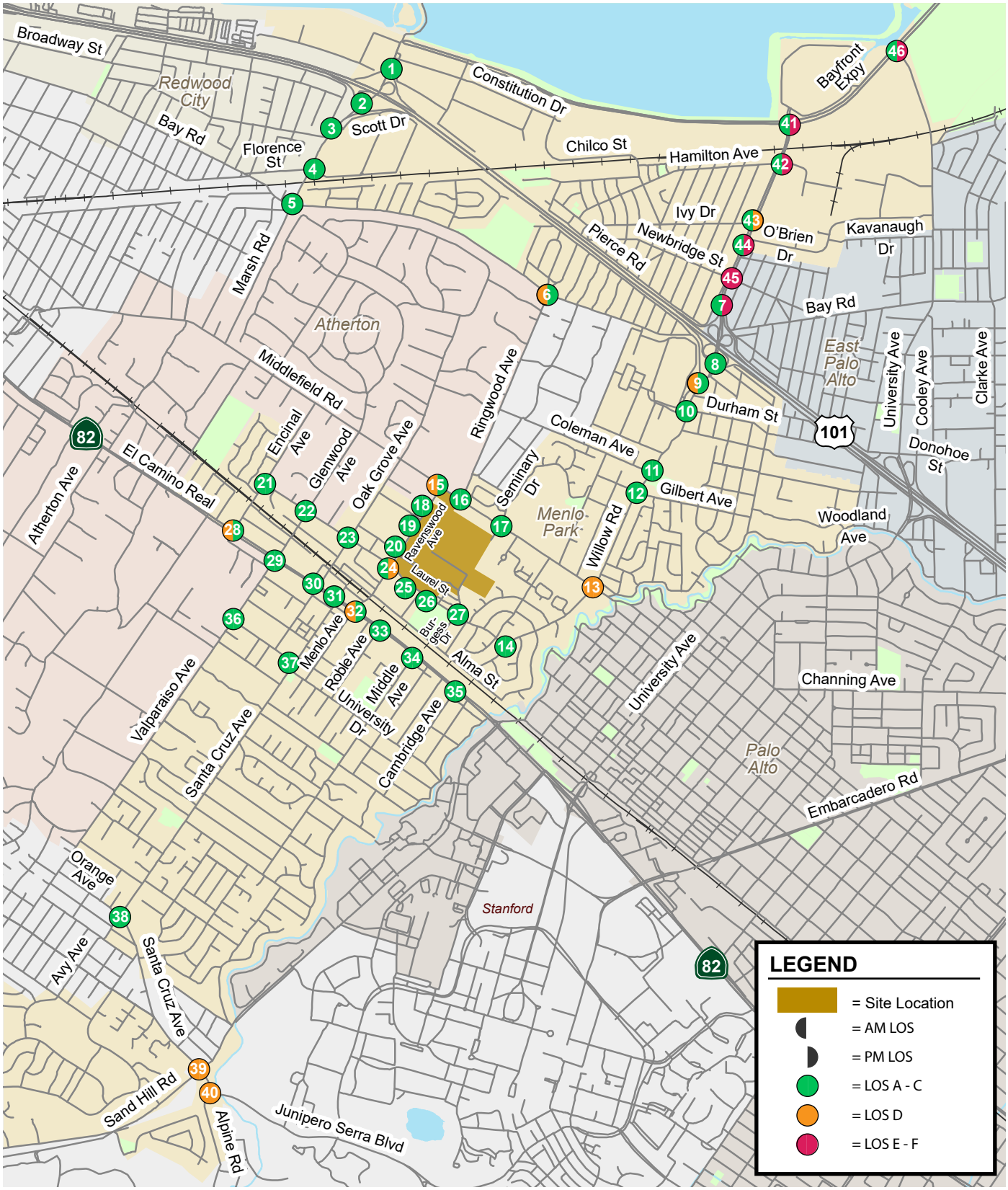


Figure 5
Existing Level of Service Summary

Existing Freeway Levels of Service

Existing weekday AM and PM peak hour traffic volumes on the study freeway segments were obtained from the *San Mateo County Congestion Management Program 2019* for segments within San Mateo County. The latest available Congestion Management Report at the time of this study details 2021 freeway conditions. However, year 2021 conditions were affected by the pandemic. Thus, as a conservative approach, the 2019 conditions were reported as existing conditions. As shown on Table 6, the following freeway segments are currently operating below their respective level of service standards, or at LOS F:

- SR 84 – between University Avenue and Alameda County Line, AM & PM Peak Hours
- US 101 – between Santa Clara County Line and Whipple Avenue, AM & PM Peak Hours

Table 6
Existing Freeway LOS – San Mateo County

CMP Facility	Roadway Segment	Dir.	Pk Hr	LOS Standard	Capacity	Existing LOS
SR 84	University Ave to Alameda County Line	SB	AM	F	2,100	**F**
		SB	PM	F	2,100	**F**
SR 84	Alameda County Line to University Ave	NB	AM	F	2,100	**F**
		NB	PM	F	2,100	**F**
US 101	Santa Clara County Line to Whipple Ave	NB	AM	F	2,300	**F**
		NB	PM	F	2,300	**F**
US 101	Whipple Ave to Santa Clara County Line	SB	AM	F	2,300	**F**
		SB	PM	F	2,300	**F**
SR 114 (Willow Rd)	US 101 to SR 84	EB	AM	E	1,100	B
		EB	PM	E	1,100	B
SR 114 (Willow Rd)	SR 84 to US 101	WB	AM	E	1,100	C
		WB	PM	E	1,100	C
SR 82 (El Camino Real)	Glenwood Avenue to SR 84	NB	AM	E	1,100	B
		NB	PM	E	1,100	A
SR 82 (El Camino Real)	SR 84 to Glenwood Avenue	SB	AM	E	1,100	B
		SB	PM	E	1,100	A
SR 82 (El Camino Real)	Santa Cruz Avenue to Glenwood Avenue	NB	AM	E	1,100	B
		NB	PM	E	1,100	C
SR 82 (El Camino Real)	Glenwood Avenue to Santa Cruz Avenue	SB	AM	E	1,100	B
		SB	PM	E	1,100	C
SR 82 (El Camino Real)	Santa Clara County Line to Santa Cruz Avenue	NB	AM	E	1,100	D
		NB	PM	E	1,100	D
SR 82 (El Camino Real)	Santa Cruz Avenue to Santa Clara County Line	SB	AM	E	1,100	D
		SB	PM	E	1,100	D

Notes:
Data referenced San Mateo County City/County Association of Governments *Congestion Management Program 2019.*
Bold indicates non-compliant LOS

Existing Freeway Ramp Capacity Analysis

This analysis consists of a volume-to-capacity ratio evaluation of the study freeway ramps. The ramp capacities were obtained from the *Highway Capacity Manual 2000 (Chapter 25),* which considers both the free-flow speed and the number of lanes on the study ramps. It was assumed that if ramp meter equipment is present, on-ramps on northbound US 101 would be metered during the AM peak hour, and on-ramps on southbound US 101 would be metered during the PM peak hour. Metered ramps are analyzed with a capacity of 900 vehicles per hour for the mixed-flow lanes. As shown on Table 7, the existing ramps currently have sufficient capacity to serve the existing traffic volumes.

Table 7
Freeway Ramp Capacity

		Peak	Lanes					Existing Conditions	
Interchange	Ramp	Hour	Type	Mixed	HOV	Meter [1]	Capacity [2]	Volume [3]	V/C
US 101/Marsh Road	SB off-ramp to Marsh Road	AM	Diagonal	2	-	-	3,800	1,402	0.37
		PM					3,800	1,932	0.51
	SB on-ramp from EB Marsh Rd	AM	Diagonal	1	1	-	2,000	650	0.33
		PM				YES	1,800	830	0.46
	NB off-ramp to Marsh Road	AM	Diagonal	1	-	-	2,000	1,127	0.56
		PM					2,000	782	0.39
	NB on-ramp from EB Marsh Rd	AM	Loop	1	-	YES	900	381	0.42
		PM				-	1,900	388	0.20
US 101/Willow Road	NB off-ramp to Willow Road	AM	Diagonal	2	-	-	3,800	1,031	0.27
		PM					3,800	1,115	0.29
	NB on-ramp from EB Willow Road	AM	Loop	1	1	YES	1,800	258	0.14
		PM				-	1,900	608	0.32
	SB on-ramp from EB Willow Road	AM	Diagonal	1	1	-	2,000	646	0.32
		PM				YES	1,800	364	0.20
	SB off-ramp to Willow Road	AM	Diagonal	2	-	-	3,800	509	0.13
		PM					3,800	867	0.23

Notes:
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound
1. Northbound on-ramps are assumed metered during the AM peak hour. Southbound on-ramps are assumed metered during the PM peak hour.
2. Ramp capacities were obtained from *Highway Capacity Manual 2000*, and considered the free-flow speed, the number of lanes on the ramp, and ramp metering.
3. Existing volumes referenced intersection counts collected in 2022/2023.

Observed Existing Traffic Conditions

Traffic conditions were observed in the field at each study intersection in order to identify existing operational deficiencies and to confirm the accuracy of the calculated level of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, (2) identify any locations where the level of service analysis does not accurately reflect existing traffic conditions. Hexagon conducted field observations on a regular weekday during the AM and PM peak periods in May 2023.

Marsh Road between US 101 NB Off-Ramp and Bay Road

There were no progression issues observed along this corridor during the AM peak hour. Two left-turn movements along this corridor were observed to have queues that did not always clear within one cycle, including the westbound left-turn movement from Marsh Road onto Scott Drive and the eastbound left-turn movement from Marsh Road onto Florence Street.

Some queuing was observed along this corridor during the PM peak hour, but queues were generally able to clear within one signal cycle. Through traffic queues sometimes affected traffic flow at upstream intersections. Vehicles were observed to favor the outer lanes in order to access the US 101 SB and

NB on-ramps. Some left-turn movements along this corridor were observed to have queues that did not always clear within one cycle, including the eastbound left-turn movement from Marsh Road onto Florence Street and the northbound left-turn movement from the US 101 NB off-ramp onto Marsh Road.

Ringwood Avenue & Bay Road

During the AM peak hour, many vehicles, bicycles, and pedestrians were observed to travel toward westbound Ringwood Avenue. Northbound queues were observed to extend past Menlo Oaks Drive and southbound queues extended toward Del Norte Avenue. Traffic was able to flow fairly efficiently, however there was some confusion observed among drivers when more than three of the five approaches were full, especially with the frequent bike and pedestrian activity. Vehicles were observed to ease into the intersection at the same time as other vehicles as there appeared to be confusion about who had the right-of-way.

During the PM peak hour, long queues were observed on eastbound Ringwood Avenue, but traffic was able to move quickly since there weren't as many vehicles on the other approaches.

Willow Road between US 101 NB Ramps and Middlefield Road

Queuing was observed in the westbound direction along this corridor during the AM peak hour. Queues were observed to stem from downstream intersections and sometimes impact westbound traffic flow, especially at the Willow Road & Bay Road intersection. Westbound traffic at the US 101 northbound and southbound ramps was observed to flow freely, except for vehicles using the US 101 southbound loop on-ramp. US 101 southbound was observed to be congested, which created queues in the outermost westbound lane on Willow Road that extended through the US 101 northbound ramp intersection. Two left-turn movements along this corridor were observed to have queues that did not always clear within one cycle, including the southbound left-turn movement from the US 101 southbound off-ramp onto Willow Road and the southbound left-turn movement from Bay Road onto Willow Road.

During the PM peak hour, queuing was observed in the eastbound direction. Queues from downstream intersections spilled back to the US 101 northbound ramps intersection and frequently impacted traffic flow. Queues on the US 101 northbound off-ramp extended onto the freeway. West of the US 101 northbound ramps, eastbound queues were usually able to clear within one signal cycle. Two left-turn movements along this corridor were observed to have queues that did not always clear within one cycle, including the southbound left-turn movement from the US 101 southbound off-ramp onto Willow Road and the northbound left-turn movement from the US 101 northbound off-ramp onto Willow Road.

Middlefield Road between Ravenswood Avenue and Seminary Drive

During the AM peak hour, the northbound left turn queue from Middlefield Road to westbound Ravenswood Avenue often reached the Ringwood Avenue intersection. During the peak time, the northbound left turn green time increased to allow more vehicles through the intersection. The first cycle with a long northbound left turn queue resulted in 10 vehicles waiting for a second cycle. However, the cycles after that had increased green time and allowed the entire queue to clear in one cycle.

During the PM peak hour, the southbound left turn queue at the downstream intersection of Ringwood Avenue/Middlefield Road often reached close to the Ravenswood Avenue intersection. Vehicles expecting to continue southbound on Middlefield Road were able to go around the queue into the second lane. Therefore, not all southbound vehicles were able to clear the intersection in one cycle.

Ravenswood Avenue and Laurel Avenue

During the AM peak hour, the downstream westbound queue at the Alma Street/Ravenswood Avenue intersection occasionally reached the Laurel Avenue intersection. This caused the northbound left turn queue to wait for the queue to begin clearing the receiving lane. However, the green time allowed all vehicles to clear the intersection.

During the PM peak hour, Hexagon observed the Caltrain gates were down during one of the cycles. The Caltrain came during the eastbound/westbound through green time, which caused the queue to back up into the Laurel Avenue intersection. However, the green time allowed all vehicles to clear the intersection.

El Camino Real between Encinal Avenue and Santa Cruz Avenue

During the AM peak hour, southbound from Encinal Avenue to Santa Cruz Avenue would occasionally spillback into upstream intersections. However, most vehicles were able to clear the intersection within one signal cycle. Occasionally, the side streets required two signal cycles to clear.

El Camino Real and Ravenswood Avenue/Menlo Avenue

During the PM peak hour, the eastbound queues would extend approximately 400 feet to 500 feet upstream and would frequently fail to clear the intersection in one green cycle. Also, the southbound left-turn queues would occasionally spillback out of the storage lane and when this occurred the southbound left-turn traffic would fail to clear the intersection in one cycle.

El Camino Real between Roble Avenue and Cambridge Avenue

During the PM peak hour, heavy traffic congestion on northbound El Camino Real was observed. The spillback from vehicles traveling north along El Camino Real often extended past Cambridge Avenue. The northbound left-turn movement is frequently blocked by the northbound through queue and required two signal cycles to clear.

University Drive and Santa Cruz Avenue

This is an offset intersection with University Drive intersects with Santa Cruz Avenue (east-west) at two locations which are approximately 190 feet apart. The east intersection is an all-way-stop control intersection. No traffic issues were observed during the AM and PM peak hours.

The west intersection is a signalized intersection. During the AM peak hour, the eastbound right turn traffic queue on Santa Cruz Avenue intermittently spillovers from the right turn pocket but the queue cleared during one signal cycle.

During the PM peak hour, the eastbound right turn traffic queue on Santa Cruz Avenue intermittently spillovers from the right turn pocket but the queue cleared during one signal cycle.

Santa Cruz Avenue and Sand Hill Road

During the AM peak hour, southbound traffic on Santa Cruz Avenue occasionally required two signal cycles to clear.

During the PM peak hour, heavy congestion and excessive delays were observed on the westbound Sand Hill Road and northbound Santa Cruz Avenue approaches. The westbound through movement on Sand Hill Road fails to clear in one signal cycle and vehicle queues constantly extend beyond upstream intersection at Oak Avenue. Due to heavy traffic on the northbound Santa Cruz Avenue approach, northbound queues on Santa Cruz Avenue constantly extend to the upstream intersection at Junipero Serra Boulevard. Southbound queues from upstream intersection at Junipero Serra Boulevard also

constantly extend back to this intersection. As a result, all traffic movements (i.e. the eastbound right turn, the westbound left turn, and the southbound through) that turn onto the southbound receiving lanes of Santa Cruz Avenue experience extended delays of more than one signal cycle.

Santa Cruz Avenue/Alpine Road and Junipero Serra Boulevard

During the AM peak hour, heavy northbound traffic on Alpine Road was observed that frequently required two signal cycles to clear.

During the PM peak hour, the northbound Santa Cruz Avenue and westbound Junipero Serra Boulevard movement experience considerable delays due to congestion extending from the downstream intersection at Santa Cruz Avenue and Sand Hill Road. The westbound right turn movement on Junipero Serra Boulevard and northbound through movement on Santa Cruz Avenue experience heavy delays. Queues for these movements frequently do not clear during the respective green phase due to downstream congestion. The westbound approach was observed to have long queues extending onto Fremont Road intermittently.

Willow Road from Newbridge Street to Bayfront Expressway

During the AM peak hour, westbound Willow Road sometimes queues from Newbridge Street past Ivy Drive, requiring vehicles multiple signal cycles to clear this section of Willow Road. Heavy northbound through and left-turn traffic were observed at the Bayfront Expressway intersection. The northbound traffic generally required more than one signal cycle to clear the Willow Road intersection as a result.

During the PM peak hour, heavy traffic congestion on eastbound Willow Road was observed from Bayfront Expressway extending west past Newbridge Street. This is mainly because of the heavy congestion on southbound Bayfront Expressway south of Willow Road. Vehicles often required more than one signal cycle to clear each intersection along this section of Willow Road.

Bayfront Expressway and University Avenue

During the AM peak hour, northbound Bayfront Expressway consistently queued well onto the Dumbarton Bridge. The northbound left-turn movement also consistently filled the turn pocket. While the left-turn pocket was able to clear within each cycle, it's also immediately filled by left-turn vehicles that couldn't access the pocket.

During the PM peak hour, southbound Bayfront Expressway consistently queued north to Willow Road. The eastbound right-turn movement at University Avenue was consistently heavy and queued towards Purdue Avenue and required two signal cycles to clear. In general, the eastbound right-turn movement and the southbound through movement received the majority of the green time at this intersection, but progression on the Dumbarton Bridge was slow, causing lengthy backups on southbound Bayfront Expressway that affected upstream intersection operations.

Project Trip Estimates

Trip generation estimates for the mixed-use development are based on standard trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. Below is a general discussion of the trip generation estimation methodology. Because future commercial tenants in the office/R&D area are not yet known, proposed commercial buildings in the office/R&D area are designed to accommodate either office uses, R&D or life science uses, or a combination of both. Therefore, this report evaluates two buildout scenarios within the office/R&D area: a 100% office scenario and a 100% R&D scenario. Table 8 shows the trip generation estimates for the 100% office scenario and Table 9 shows the trip generation estimates for the 100% R&D scenario. These estimates show that the 100% office scenario would generate more peak hour trips than a 100% R&D or a mix of

office and R&D scenarios. Therefore, the 100% office scenario is used to identify the Proposed Project's traffic operational effects and intersection improvements.

Gross Project Trip Generation

A description of the source of trip generation rates for each land-use is provided below:

- ***Office.*** Initial trip estimates for office and amenity uses are based on "ITE Land Use code 710: General Office Building".
- ***R&D.*** Initial trip estimates for R&D and amenity uses are based on "ITE Land Use code 760: Research and Development Center".
- ***Market-Rate Multifamily Residential.*** Initial trip estimates are based on the "ITE Land Use code 221: Multifamily Housing (Mid-Rise)", which includes apartments and condominiums located within the same building that has between four to ten levels.
- ***Market-Rate Townhouse.*** The Proposed Project would include three-bedroom townhouses. Initial trip estimates for the townhouses are based on the "ITE Land Use code 215: Single-Family Attached Housing", which includes townhouses/rowhouses.
- ***Affordable BMR Housing***. Initial trip estimates are based on the "ITE Land Use code 223: Affordable Housing".
- ***Publicly Accessible Park.*** The Proposed Project would include active recreational areas in the Ravenswood Avenue Parklet on the northern edge of the Project Site. Trip estimates are based on "ITE Land Use code 488: Soccer Complex". The programmatic design of the park has not been determined. In order to provide a conservative estimate of potential traffic generation and allow for flexible programming for the Proposed Project through the project review process, it is assumed that the park will have play structures and open field areas for warm-ups or casual play.

Trip Reductions from Internal Capture

Since this Proposed Project is mixed-use in nature, a portion of the trips generated by the Proposed Project would both begin and end within the development, referred to as internal capture. Internal capture trip estimates were made for each of the Proposed Project's land uses based on the specific mix of uses, sizes, and location within the Project Site utilizing a combination of two internal capture methodologies: the Transportation Research Board (TRB) *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments,* and US EPA *Mixed Use Trip Generation Model v.4 (MXD),* 2010.

NCHRP Report 684 includes an assessment of on-site land-use categories including office, residential, retail, restaurants, theaters, and hotels within the site land use mix when generating internal capture. The EPA MXD method does not explicitly differentiate subcategories such as restaurants, theaters, and hotels but it does account for location factors influencing the Proposed Project, including regional location, transit availability, density of development, walkability factors, and the sociodemographic profile of site residents and businesses. Local area characteristics inputs into the EPA MXD model are included in Appendix D. Given the strengths and weaknesses of both methodologies, an integrated approach for internal capture was developed as described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo, American Planning Association, May 2013.* In accordance with the PAS memo, the full EPA MXD methodology and NCHRP 684 methodology were applied to estimate internal capture from each method. The results of the two methods were then

combined using proportioning factors provided in the PAS Memo (see Appendix D). The resulting internalization rate for the proposed project is approximately 4.7%.

Transportation Demand Management (TDM)

The Proposed Project would include a project-specific TDM plan for both the residential and commercial uses to reduce the total number of single-occupancy vehicle trips associated with the Proposed Project by 28% for the office/R&D land use, and 25% for the residential land use. At the time of this analysis, the TDM plan only included a 25% TDM reduction. However, a sensitivity analysis assuming a TDM plan with up to 40% trip reduction showed no differences in the analysis conclusions. Therefore, this study is presented with the original 25% TDM reduction assumption. This reduction would be applied to the net project trip generation after accounting for internalization. The Proposed Project's draft TDM Plan is included in Appendix F.

Net Project Trip Generation

As shown in Table 8 for the 100% office scenario, the Proposed Project trips generated by the proposed land uses after accounting for the internal trip capture and proposed TDM plans would be 10,367 daily trips, 1,368 AM peak hour trips, and 1,316 PM peak hour trips.

As shown in Table 9 for the 100% R&D scenario, the Proposed Project trips generated by the proposed land uses after accounting for the internal trip capture and proposed TDM plans would be 10,554 daily trips, 979 AM peak hour trips, and 950 PM peak hour trips.

Net project trip generation represents the number of new project trips added to the surrounding roadway network. The trips generated by the existing uses are credited from the site generated trips to derive the net project trip generation.

Existing Uses

Trips associated with the existing uses on the Project Site were credited against the new trip generation. The trips generated by the existing buildings on the site were estimated based on driveway counts conducted over three days in October 2021 by Fehr & Peers for the SRI International Campus. Of the 1,100 employees on the SRI International Campus, Buildings P, S, T had 700 employees. The trip credit for the Proposed Project (excluding Buildings P, S, T) is proportioned based on employees. Therefore, the existing buildings on the Project Site generated an average of 518 daily trips, including 46 trips in the AM peak hour (38 inbound and 8 outbound trips), and 43 trips in the PM peak hour (11 inbound and 32 outbound trips).

As shown in Table 8 for the 100% office scenario, the net new trips generated by Proposed Project on the roadway network would be 9,849 daily trips, including 1,322 AM peak hour trips (1,065 inbound trips and 257 outbound trips), and 1,273 PM peak hour trips (286 inbound trips and 987 outbound trips).

As shown in Table 9 for the 100% R&D scenario, the net new trips generated by Proposed Project on the roadway network would be 10,036 daily trips, including 933 AM peak hour trips (674 inbound trips and 259 outbound trips), and 907 PM peak hour trips (216 inbound trips and 691 outbound trips).

Trip Distribution and Assignment

The trip distribution pattern and trip assignment for the proposed uses were estimated based on the Menlo Park Travel Demand Model and local peak hour commute patterns. All project driveways are assumed as full-access driveways, except the eastern project driveway on Ravenswood Avenue, which is assumed as right-in-right-out only driveway. The model estimated trip distribution pattern is summarized in Figure 6. The Proposed Project's net trip assignment is shown on Figure 7.

Table 8
Project Trip Generation Estimates – 100% Office Scenario

Land Use	ITE Code[1]	Size		Daily Rate	Daily Trips	AM Peak Hour Rate	AM In	AM Out	AM Total	PM Peak Hour Rate	PM In	PM Out	PM Total
Proposed Use													
General Office	710	1,094	ksf	10.84	11,855	1.52	1,462	200	1,662	1.44	268	1,307	1,575
Multifamily Housing (Mid-Rise)	221	431	du	4.54	1,957	0.37	37	122	159	0.39	102	66	168
Single-Family Attached Housing	215	19	du	7.20	137	0.48	2	7	9	0.57	6	5	11
Affordable Housing	223	100	du	4.81	481	0.50	15	35	50	0.46	27	19	46
Soccer Complex[3]	488	1	field	71.33	71	0.99	1	0	1	16.43	11	5	16
Gross Project Trips (before any reductions)					**14,501**		**1,517**	**364**	**1,881**		**414**	**1,402**	**1,816**
Gross Project Trips After Internal Capture Reduction					**13,822**		**1,471**	**353**	**1,824**		**396**	**1,358**	**1,754**
Project Trips After TDM Reduction (25%)					**10,367**		**1,103**	**265**	**1,368**		**297**	**1,019**	**1,316**
Other Trip Adjustments													
Existing Uses (non P, S, T Buildings)[4]					(518)		(38)	(8)	(46)		(11)	(32)	(43)
Net Project Trips on Project Network					**9,849**		**1,065**	**257**	**1,322**		**286**	**987**	**1,273**

Notes:

ksf = 1,000 square feet; du = dwelling unit

[1] Daily, AM, and PM peak hour average rates published in *ITE Trip Generation Manual, 11th Edition, 2021* were used for each land use.

[2] Internal Capture developed using *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and *US EPA Mixed Use Trip Generation Model v.4, 2010* per the methodology described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo*, American Planning Association, 2020.

[3] ITE Trip Generation Manual, 11th Edition, 2021 provides trip rates per field for a soccer complex. The Proposed Project would include active recreational areas in the Ravenswood Avenue Parklet. It is assumed that the park would have play structures and open field areas for warm-ups or casual play. The number of soccer fields on the park was estimated based on the size of a standard soccer field.

[4] Existing use trip estimates are based on driveway counts conducted by Fehr & Peers in 2021. Of the 1,100 employees on-site, Buildings P, S, T had 700 employees. The trip generation for these buildings is proportioned based on employees.

Table 9
Project Trip Generation Estimates – 100% R&D Scenario

Land Use		Size		Daily		AM Peak Hour					PM Peak Hour				
				Rate	Trips	Rate	In %	In	Out	Total	Rate	In %	In	Out	Total
Proposed Use	**ITE Code [1]**														
General R&D	760	1,094	ksf	11.08	12,117	1.03	82%	924	203	1,127	0.98	16%	171	901	1,072
Multifamily Housing (Mid-Rise)	221	431	du	4.54	1,957	0.37	23%	37	122	159	0.39	61%	102	66	168
Single-Family Attached Housing	215	19	du	7.20	137	0.48	25%	2	7	9	0.57	59%	6	5	11
Affordable Housing	223	100	du	4.81	481	0.50	29%	15	35	50	0.46	59%	27	19	46
Soccer Complex[3]	488	1	field	71.33	71	0.99	61%	1	0	1	16.43	66%	11	5	16
Gross Project Trips (before any reductions)					**14,763**			**979**	**367**	**1,346**			**317**	**996**	**1,313**
Gross Project Trips After Internal Capture Reduction					**14,072**			**949**	**356**	**1,305**			**303**	**964**	**1,267**
Project Trips After TDM Reduction (25%)					**10,554**			**712**	**267**	**979**			**227**	**723**	**950**
Other Trip Adjustments															
Existing Uses (non P, S, T Buildings) [4]					(518)			(38)	(8)	(46)			(11)	(32)	(43)
Net Project Trips on Project Network					**10,036**			**674**	**259**	**933**			**216**	**691**	**907**

Notes:

ksf = 1,000 square feet; du = dwelling unit

[1] Daily, AM, and PM peak hour average rates published in *ITE Trip Generation Manual, 11th Edition, 2021* were used for each land use.

[2] Internal Capture developed using *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and *US EPA Mixed Use Trip Generation Model v.4, 2010* per the methodology described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo*, American Planning Association, 2020.

[3] ITE Trip Generation Manual, 11th Edition, 2021 provides trip rates per field for a soccer complex. The park is planned for 4 acres. Number of soccer fields on 4 acres of land was estimated based on the size of a standard soccer field.

[4] Existing use Trip Estimates based on driveway counts conducted by Fehr & Peers in 2021. Of the 1,100 employees on-site, Buildings P, S, T had 700 employees. The trip generation for these buildings is proportioned based on employees.

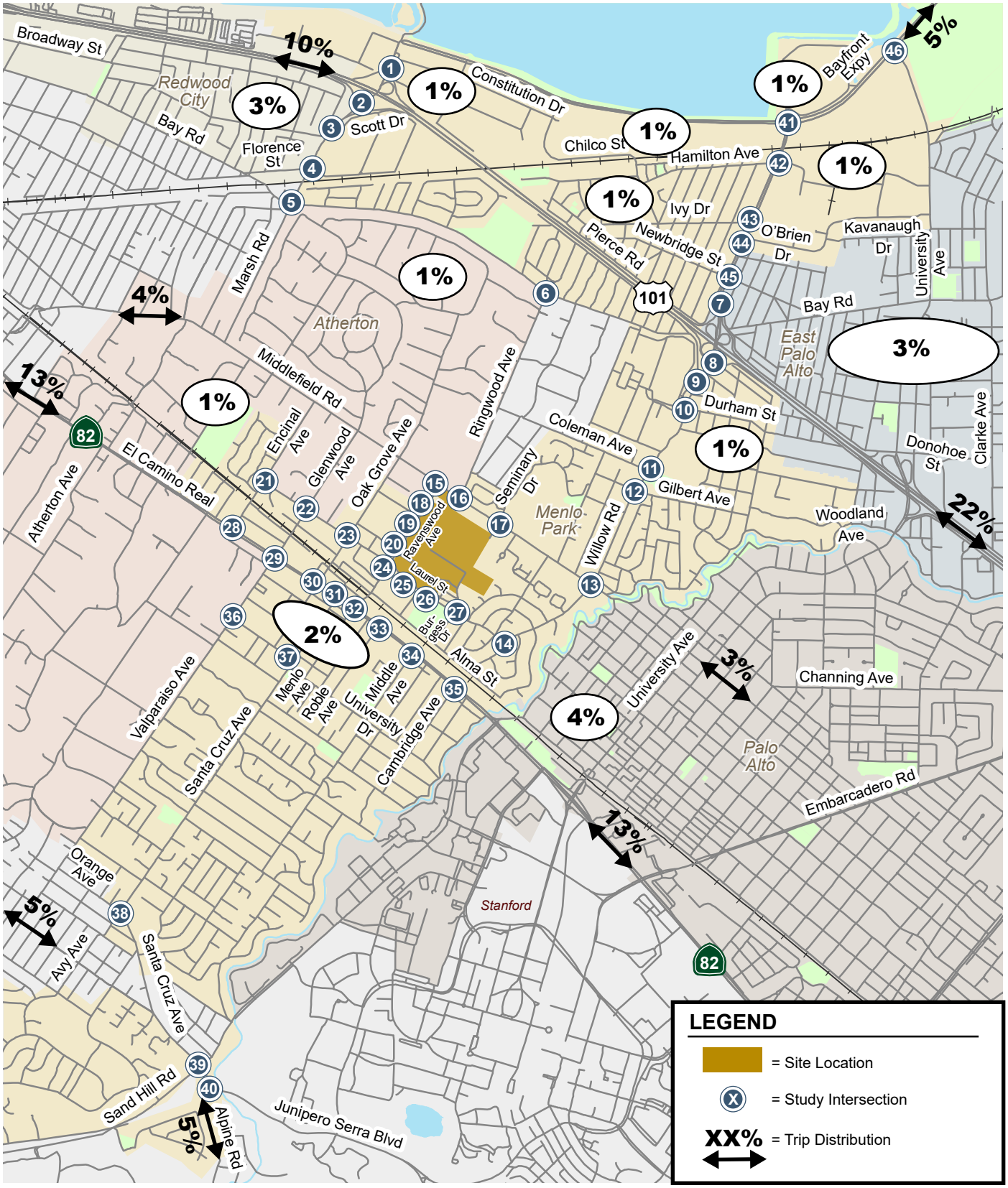
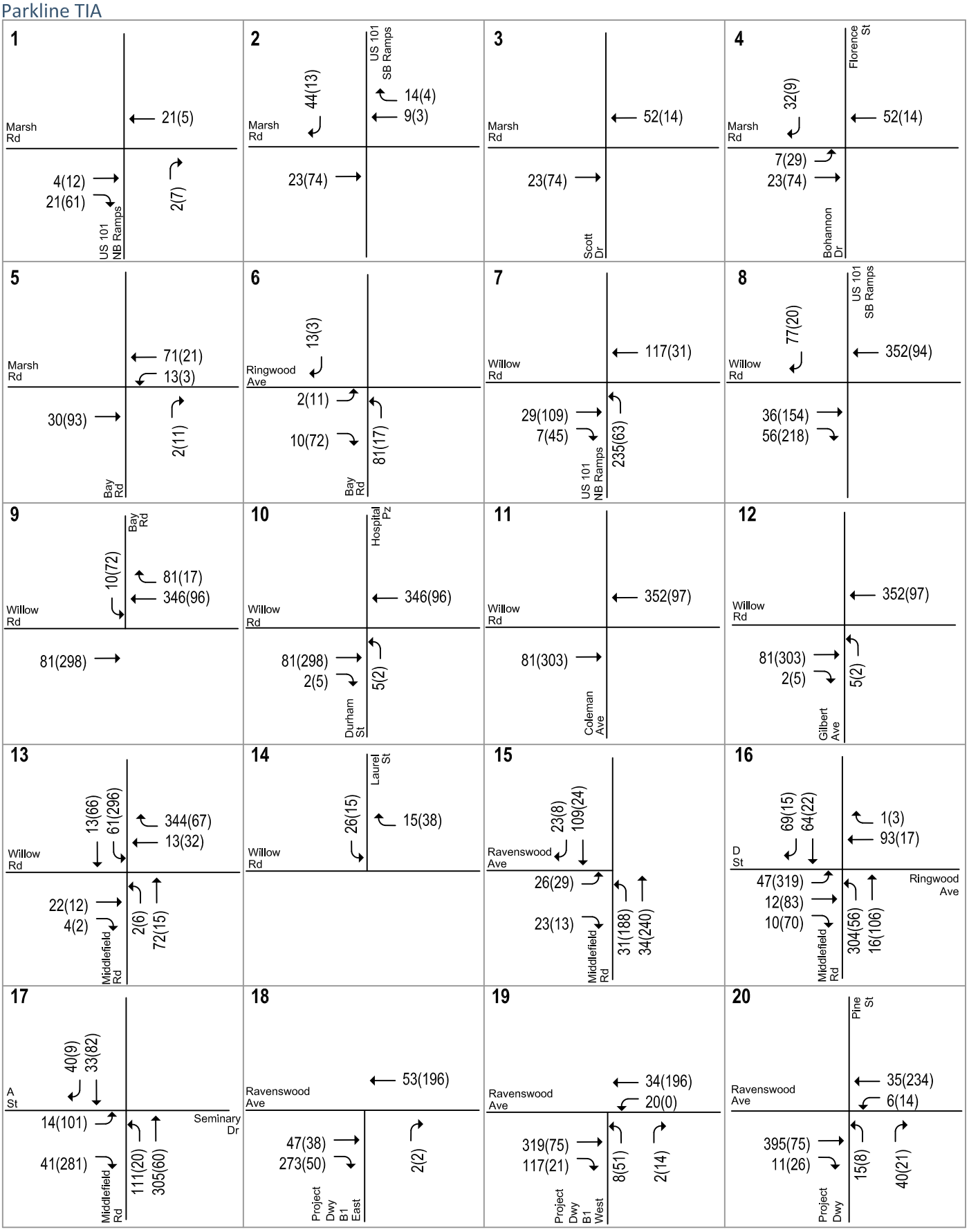


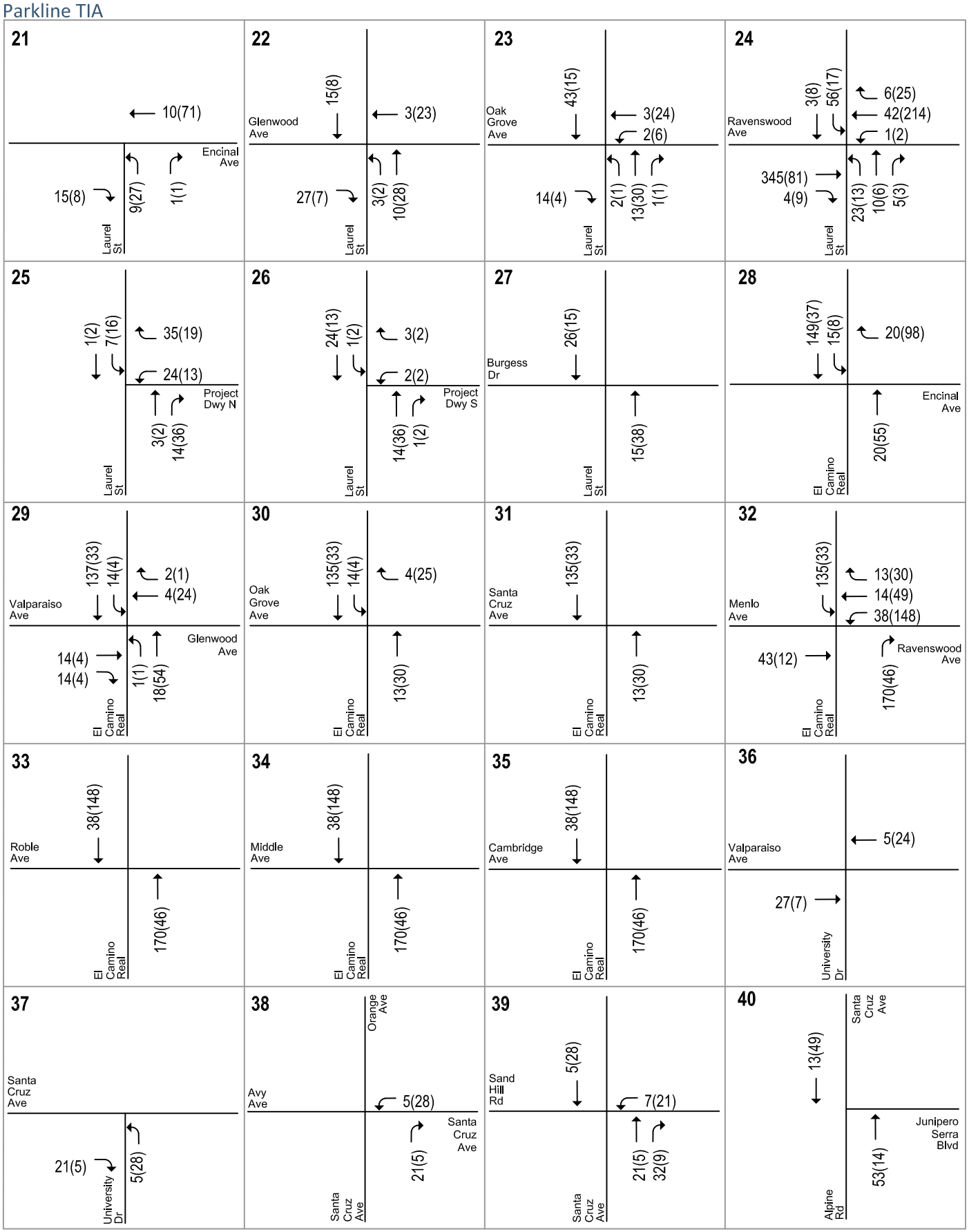
Figure 6
Project Trip Distribution



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

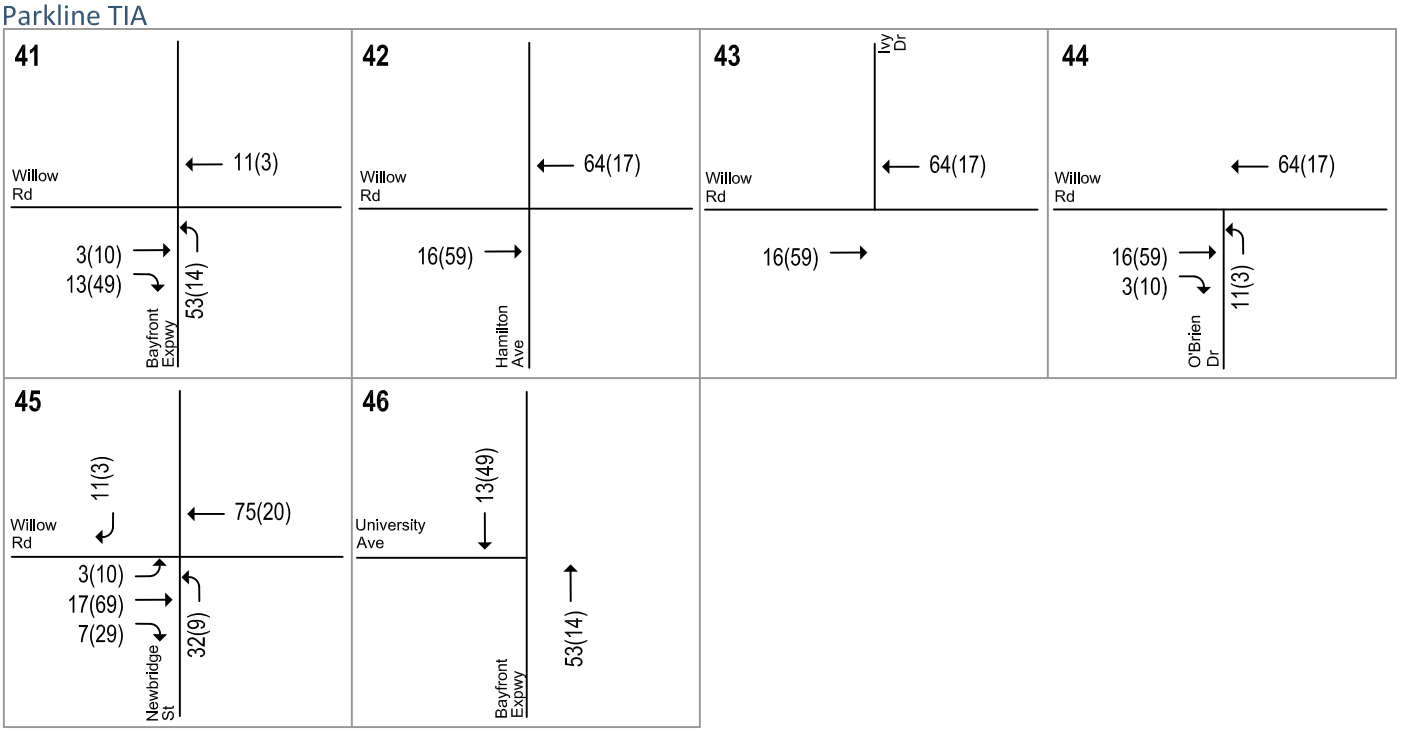
Figure 7
Project Trip Assignment



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

Figure 7
Project Trip Assignment



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

Figure 7
Project Trip Assignment

Future Traffic Volumes

Both near-term (year 2027) and cumulative (year 2040) scenario forecasts of intersection turning movements, freeway traffic and ramp volumes were completed using the latest Menlo Park travel demand forecast model (citywide travel demand forecast model). The citywide model is the best available model to represent travel within the City of Menlo Park, and serves as the primary forecasting tool for the City. The model is a mathematical representation of travel within the nine Bay Area counties, as well as the Santa Cruz, San Benito, Monterey and San Joaquin counties. The base model structure was developed by the Metropolitan Transportation Commission (MTC) and further refined by the City/County Association of Governments and Santa Clara Valley Transportation Authority for use within San Mateo County and Santa Clara County. The City further refined this model for application with Menlo Park to add more detail to the zone structure and transportation network. There are 81 transportation analysis zones (TAZs) within the model to represent the City of Menlo Park.

Year 2027 was the earliest year for expected occupancy when this analysis first started. The expected occupancy has since been revised to year 2031. However, a comparison of the Project-generated intersection non-compliances under the near-term and cumulative conditions (see Tables 11 and 12) showed that the Proposed Project would not generate more intersection non-compliance under the near-term scenario compared to the cumulative scenario. Therefore, it is not expected that a year 2031 analysis would show any intersection non-compliance not already discussed under the cumulative conditions.

Near-Term Traffic Volumes

Land use growth assumptions for Bay Area regions outside of Menlo Park for the near-term scenario (year 2027) are provided by the Association of Bay Area Governments (ABAG) and refined by VTA/C/CAG. Approved developments within the City of Menlo Park were added to the existing land use to represent the year-2027 land use. The following approved projects within the City of Menlo Park were included to represent a 2027 scenario:

- Menlo Gateway
- 1285 El Camino Real
- 133 Encinal Avenue
- 1010-1026 Alma Street
- 650-660 Live Oak Avenue
- 1275 El Camino Real
- Facebook Expansion Project
- TIDE Academy (New Magnet High School)
- Guild Theatre
- 1540 El Camino Real
- 506-556 Santa Cruz Avenue
- 1125 Merrill Street
- Springline
- 500 El Camino Real
- 1021 Evelyn Street
- 40 Middlefield Road
- 115 El Camino Real
- 409 Glenwood Avenue
- 1350 Adams Court (1315 O'Brien Drive)
- 1350 Willow Road (Facebook Willow Village)
- 111 Independence Drive

- 706-716 Santa Cruz Avenue
- 1345 Willow Road
- 201 El Camino Real
- 141 Jefferson Drive
- 1162 El Camino Real
- 3723 Haven Avenue
- 110 Constitution Drive
- 301 Constitution Drive
- 1550 El Camino Real
- 165 Jefferson Drive (Menlo Flats)

Cumulative Traffic Volumes

For the cumulative scenario, the City of Menlo Park land use assumed the buildout of the General Plan as well as the latest Housing Element Update. Land use growth for other Bay Area regions for year 2040 were taken from Association of Bay Area Governments (ABAG) projections and refined by VTA and C/CAG. Table 10 shows the socioeconomic model inputs for the entire Bay Area by county.

Table 10
Socioeconomic Model Inputs for Bay Area

	Year 2040 Project Conditions Model Land Use Data			
County	Total Households	Total Population	Employed Residents	Total Employments
San Francisco	447,340	1,076,365	559,923	759,509
San Mateo	326,094	924,720	452,413	486,586
Santa Clara	819,477	2,409,156	1,159,411	1,230,952
Alameda	705,337	1,965,356	891,473	947,642
Contra Costa	464,151	1,328,458	579,757	467,333
Solano	168,706	494,363	224,059	179,946
Napa	56,312	158,792	69,450	89,554
Sonoma	220,740	591,546	284,856	257,466
Marin	112,046	274,489	136,554	129,150
City of Menlo Park	**23,371**	**59,260**	**26,957**	**65,181**

Within the City of Menlo Park, the year 2040 General Plan land use data was further refined by ensuring the following pending developments were included in the model.

- 1125 O'Brien Drive
- 162-164 Jefferson Drive (formerly 151 Commonwealth Drive)
- 555 Willow Road (Former boarding house proposal now 3 MFR units)
- 123 Independence Drive
- 2245 Avy Avenue - Philips Brooks School Gymnasium/Flex Building
- 1220 Hoover Street
- 3705 Haven
- 1030 O'Brien
- 795 Willow
- 1075 O'Brien Drive
- 2111-2121 Sand Hill Road
- 995-1005 O'Brien Drive and 1320 Willow Road

In addition to the above land use projects, the High Speed Rail project is also assumed under the Year 2040 scenario. While this project is not a land use project, it could also alter travel patterns.

For the purpose of the transportation analysis, the Proposed Project is also included in the Year 2040 model forecasts to generate a cumulative with project model scenario. Therefore, project trips were subtracted from cumulative plus project traffic volumes to generate cumulative no project conditions.

The forecasted intersection turning movements under all future scenarios were adjusted based on existing volumes to generate traffic volumes for near-term conditions (see Figure 8), near-term plus project conditions (see Figure 9), cumulative conditions (see Figure 10), and cumulative plus project conditions (see Figure 11).

Although the Project Site could be occupied by office, R&D, or a mix of office and R&D uses. As discussed under Project Trip Estimates, the 100% office scenario would generate more trips than a 100% R&D or a mix of office and R&D scenarios. Therefore, the 100% office scenario is used to identify the Proposed Project's traffic operational effects. The traffic volumes for with-project conditions are based on the 100% office scenario.

Future Transportation Networks

Near-Term (2027) Conditions

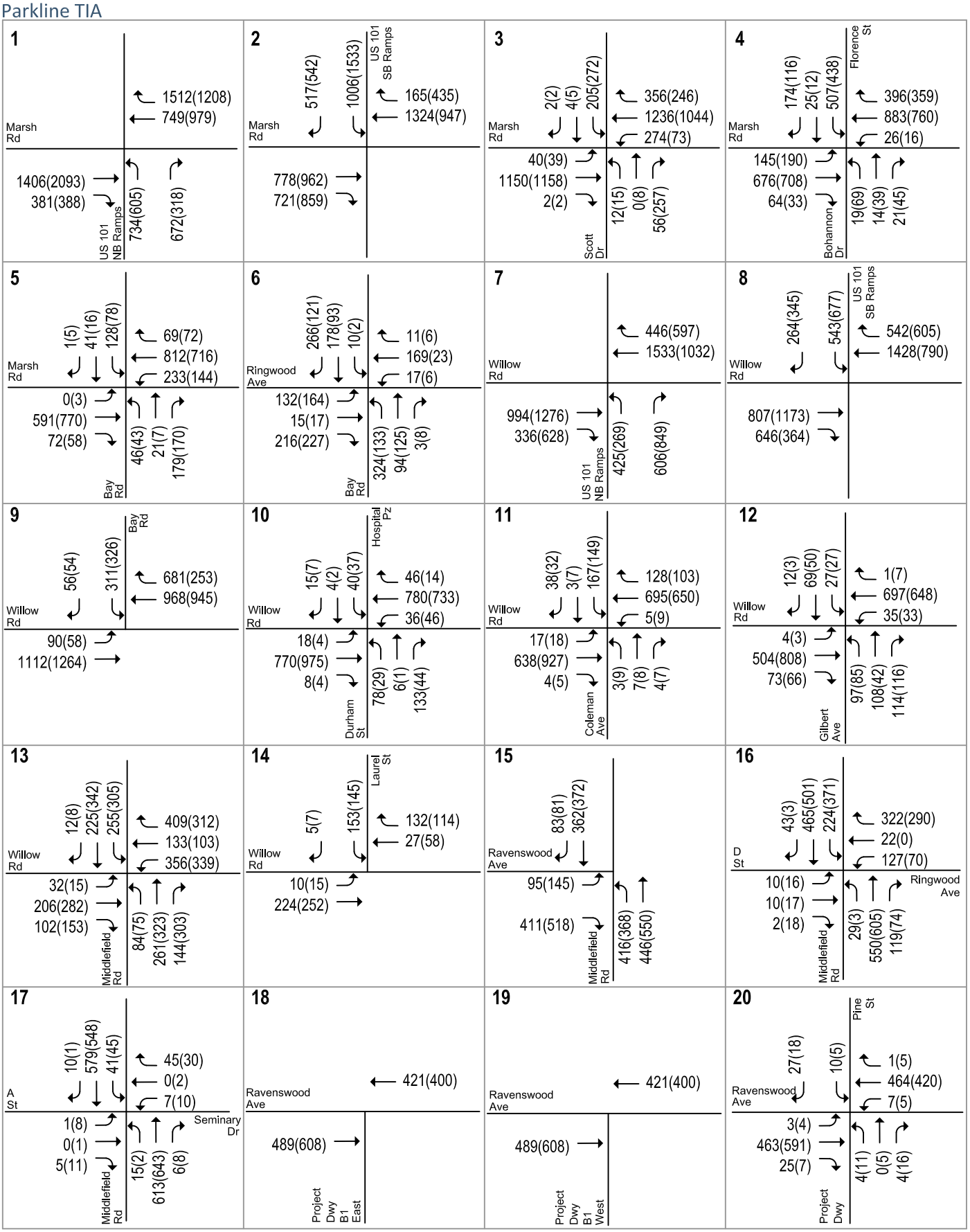
The roadway network under the near-term (2027) scenarios is assumed to include the following improvements. The roadway network for other study intersections is assumed to be the same as under existing conditions.

- **17. Middlefield Road and Seminary Drive:** At the time field observations were conducted, Middlefield Road had two northbound lanes at the intersection. However, the City recently restriped Middlefield Road to reduce to one northbound lane at the intersection, which is reflected in the near-term conditions analysis.
- **45. Newbridge Street and Willow Road:** The Menlo Park Traffic Impact Fee (TIF) program proposes to modify the signal timing to a protected left-turn phasing operation on Newbridge Street, provide a leading left-turn phase on the southbound movement and a lagging left-turn phase on the northbound movement, and optimize signal timing.

Near-Term (2027) plus Project Conditions

Under project conditions, access to the Project Site would be provided via two driveways along Middlefield Road and three driveways along Ravenswood Avenue. The Project driveways were analyzed with the following characteristics.

- **16. Middlefield Road and Ringwood Avenue:** The Project driveway is proposed to be the west leg of the signalized intersection. The Project driveway approach would have one shared left-through lane and one right-turn lane. The lane configurations for the other approaches would remain the same. The signal was analyzed with the existing timing and phasing (permitted left turns for eastbound and westbound approaches on Ringwood Avenue).
- **17. Middlefield Road and Seminary Drive:** The Project driveway is proposed to be the west leg of the unsignalized intersection as a stop-controlled approach. The Project driveway approach would have one shared left-through lane and one right-turn lane. The lane configurations for the other approaches would remain the same.

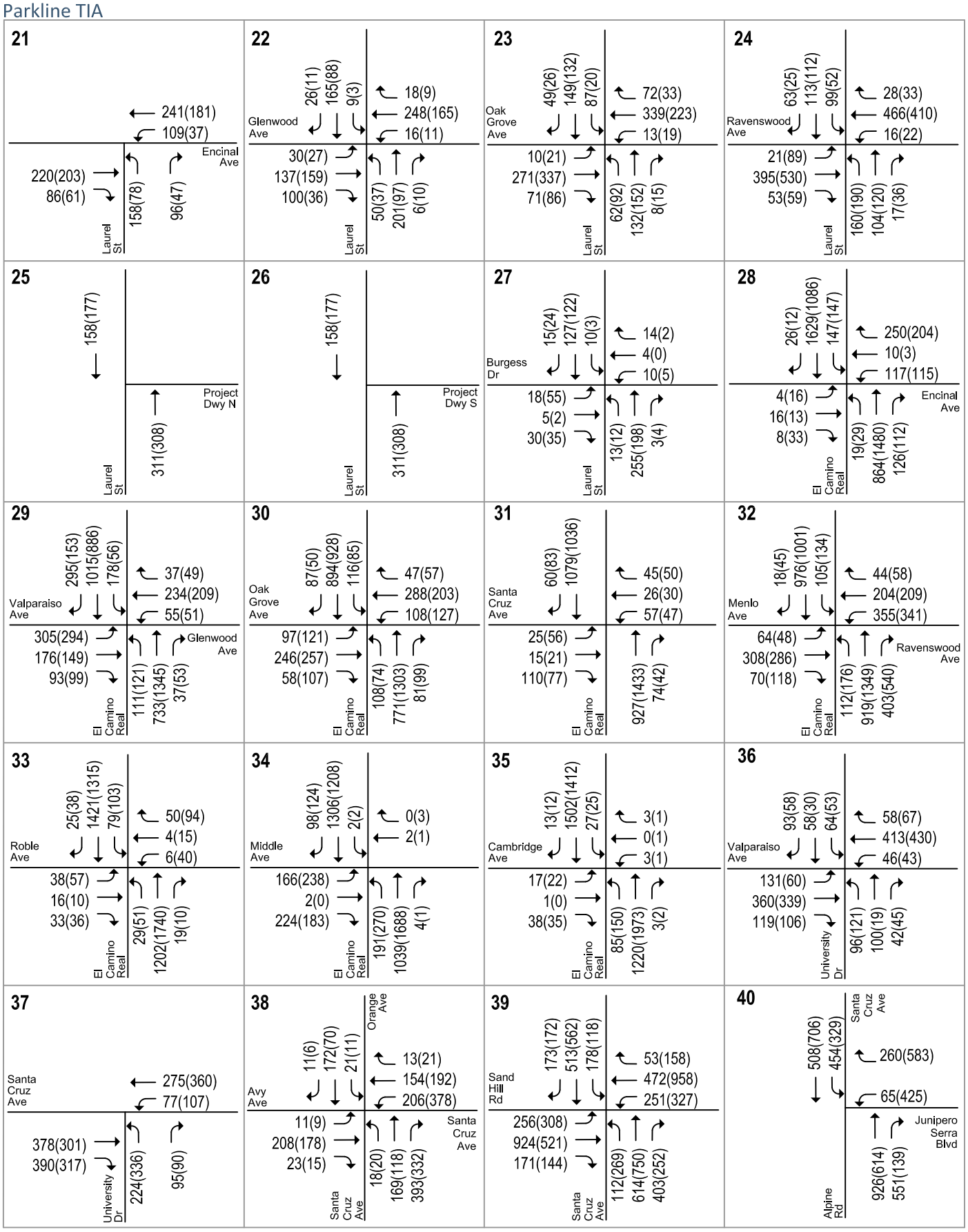


LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 8
Near-Term Traffic Volumes

NORTH
Not to Scale

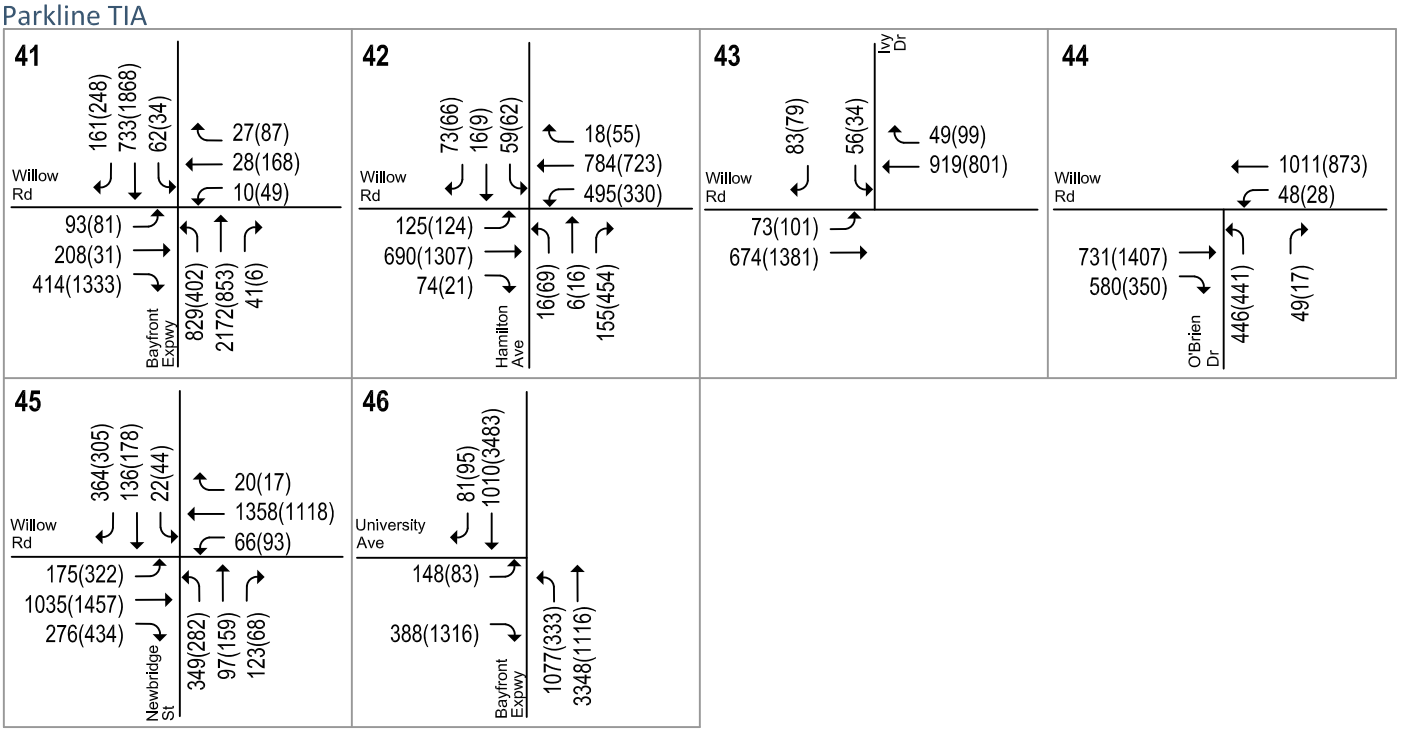


LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 8
Near-Term Traffic Volumes

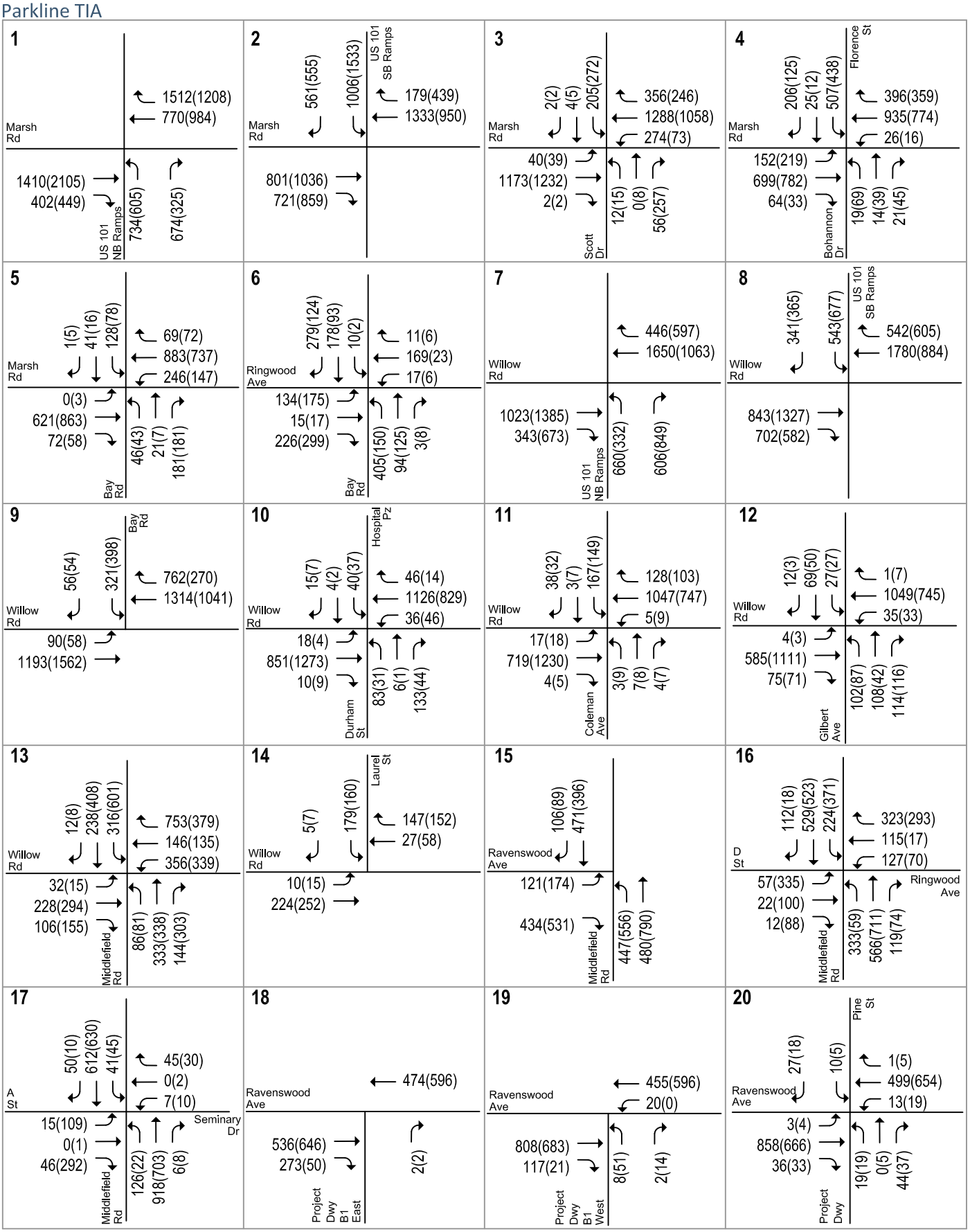
NORTH
Not to Scale



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

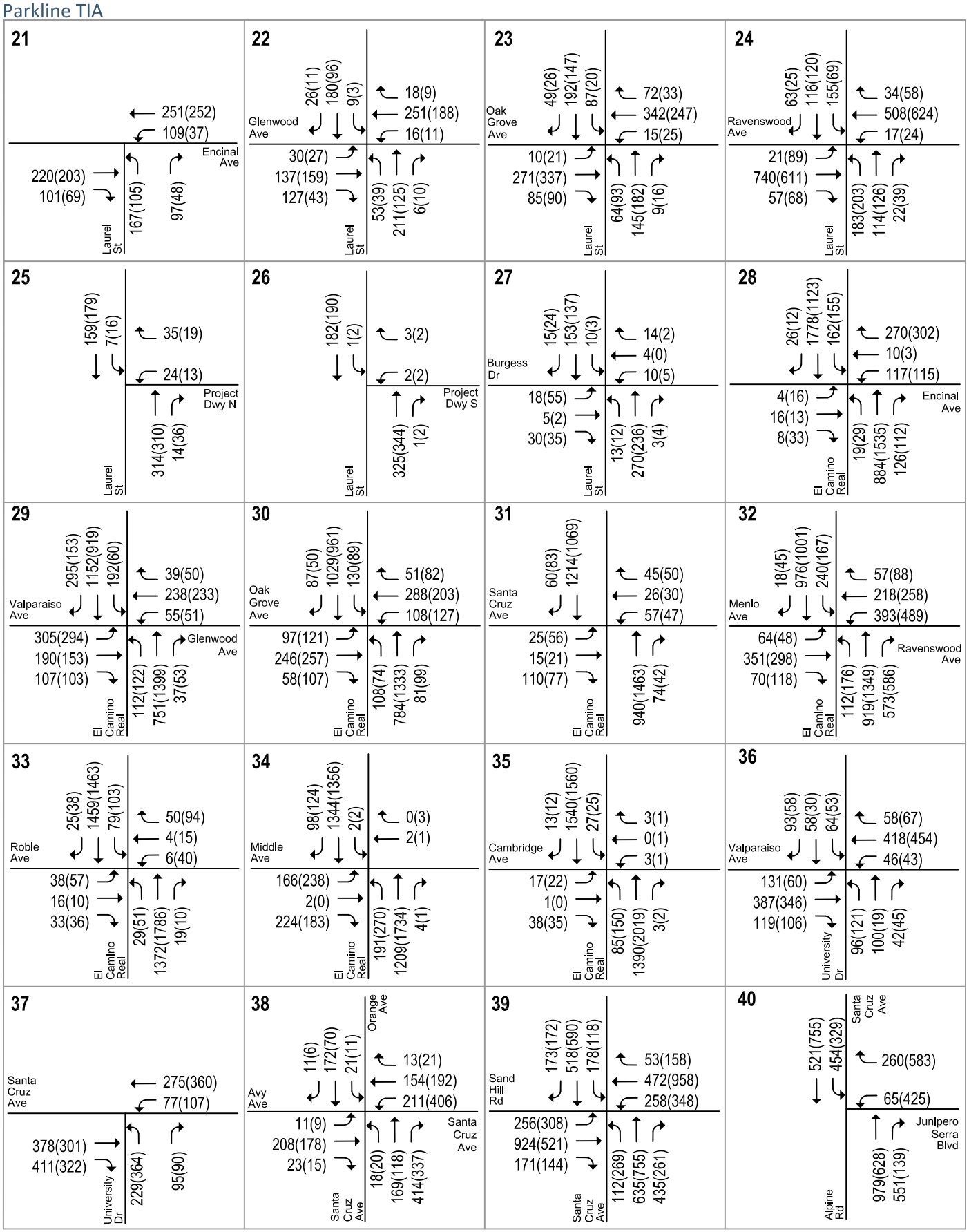
Figure 8
Near-Term Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 9
Near-Term Plus Project Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

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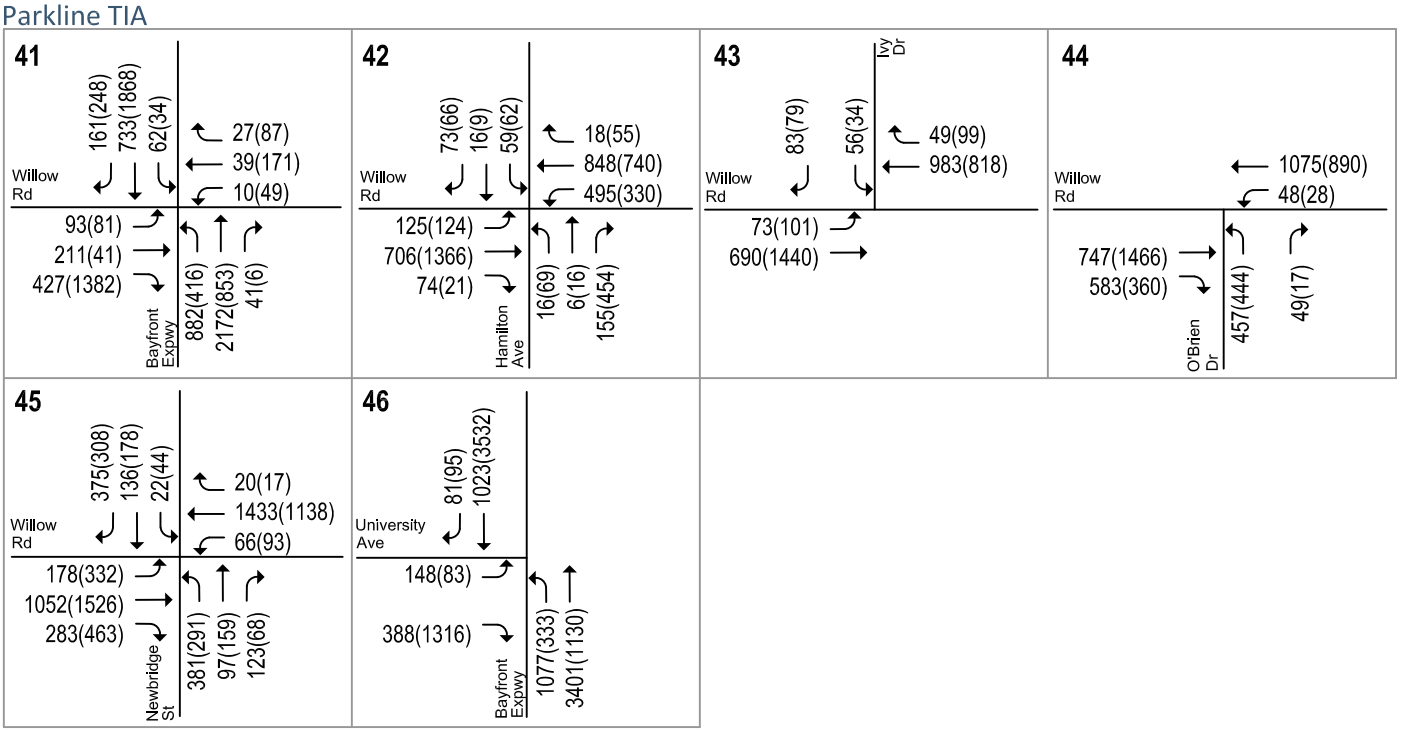
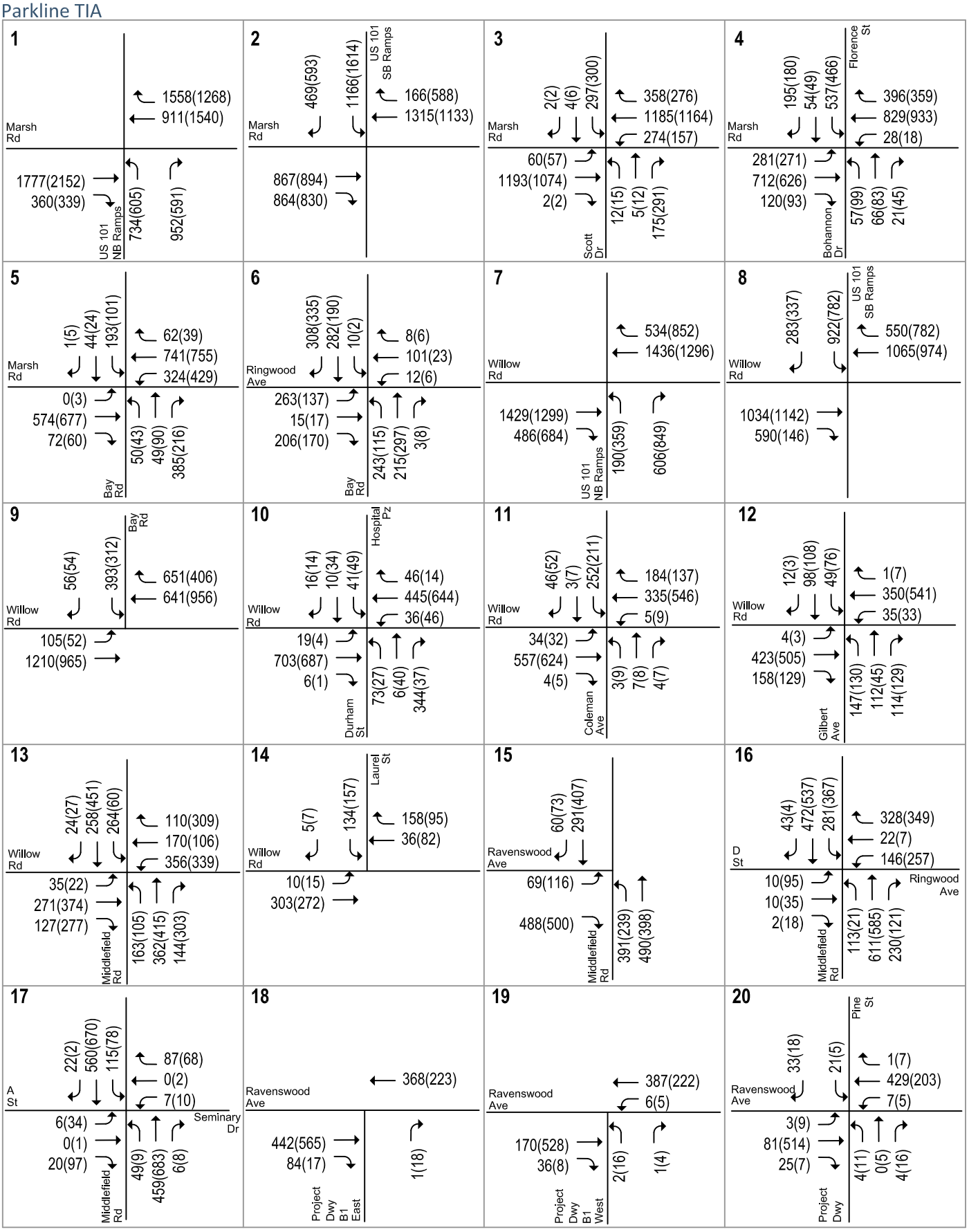
Near-Term Plus Project Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 9
Near-Term Plus Project Traffic Volumes

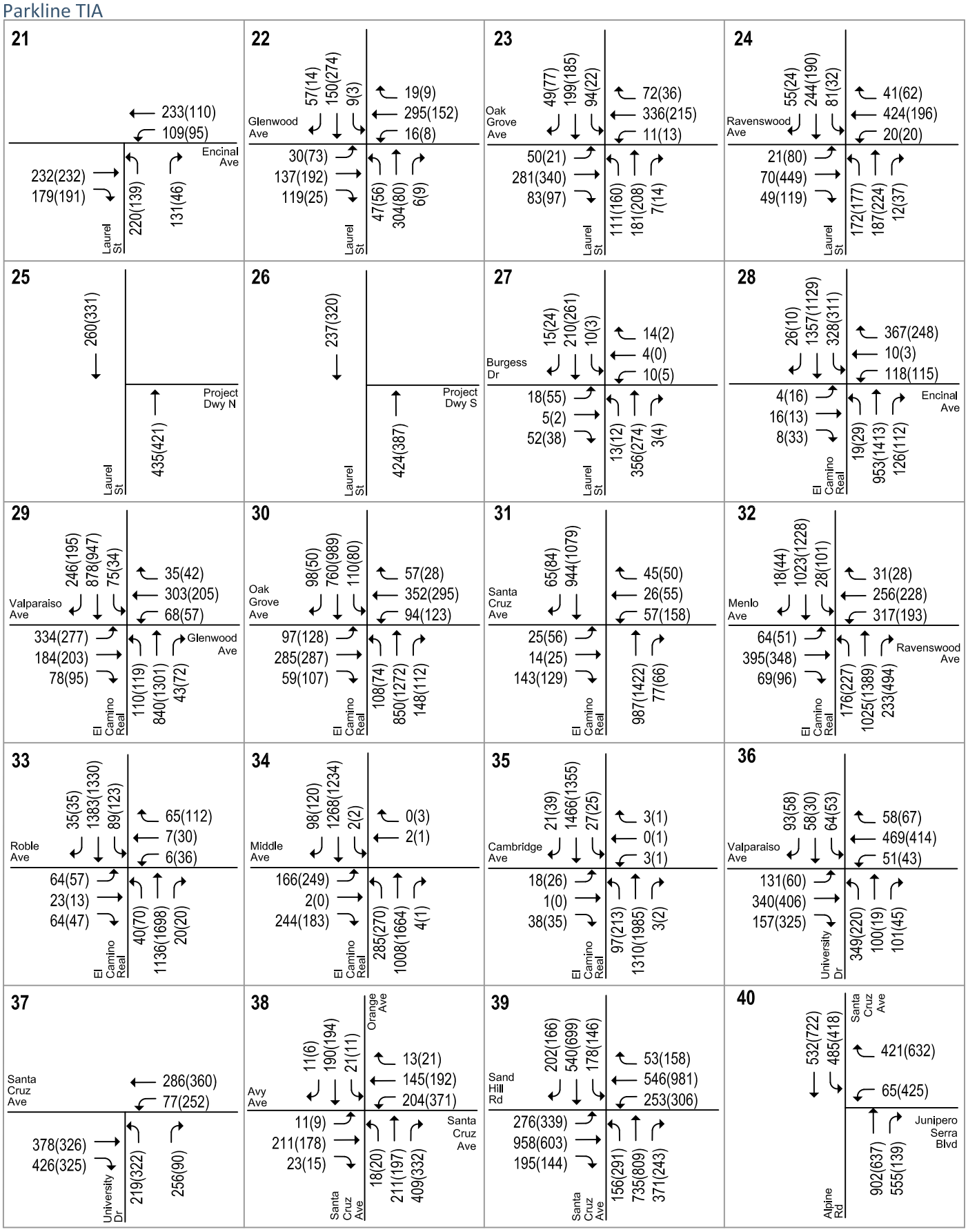


LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 10
Cumulative Traffic Volumes

NORTH
Not to Scale



LEGEND

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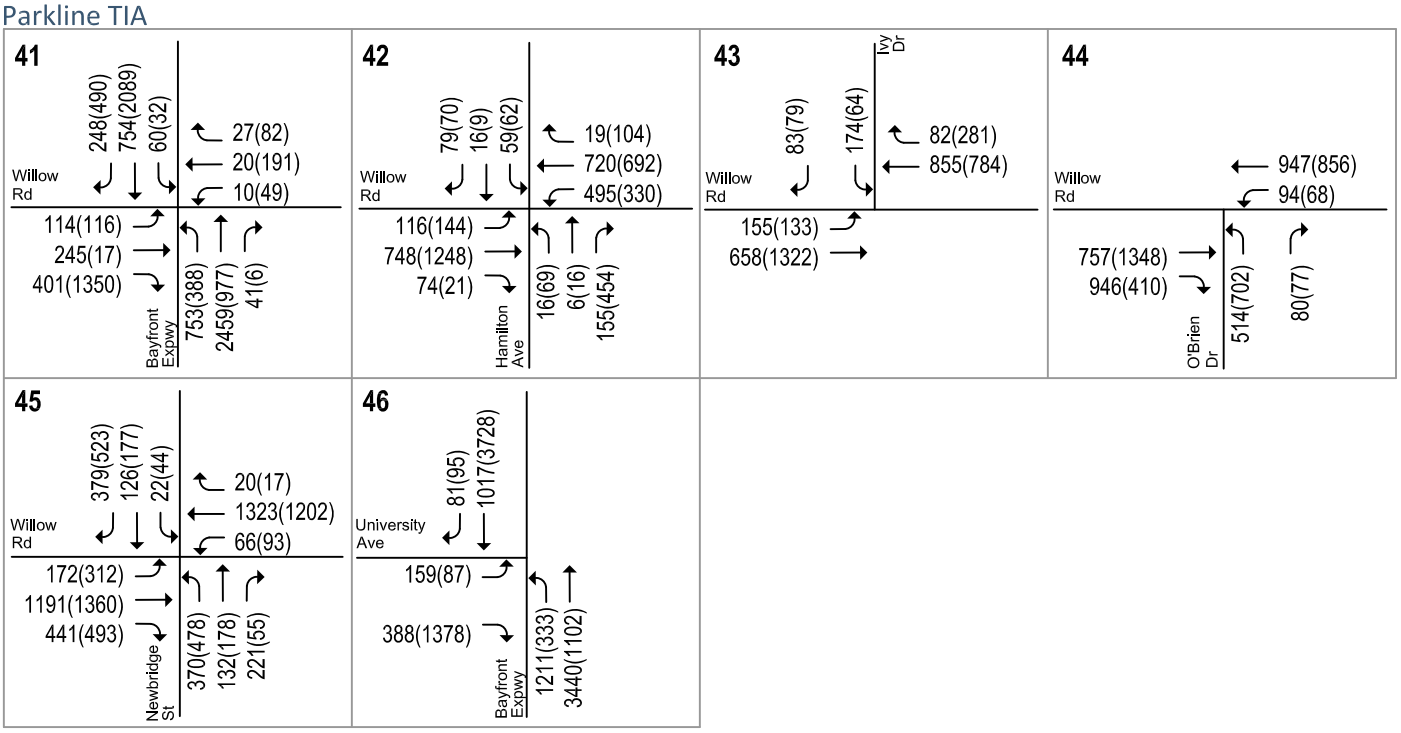
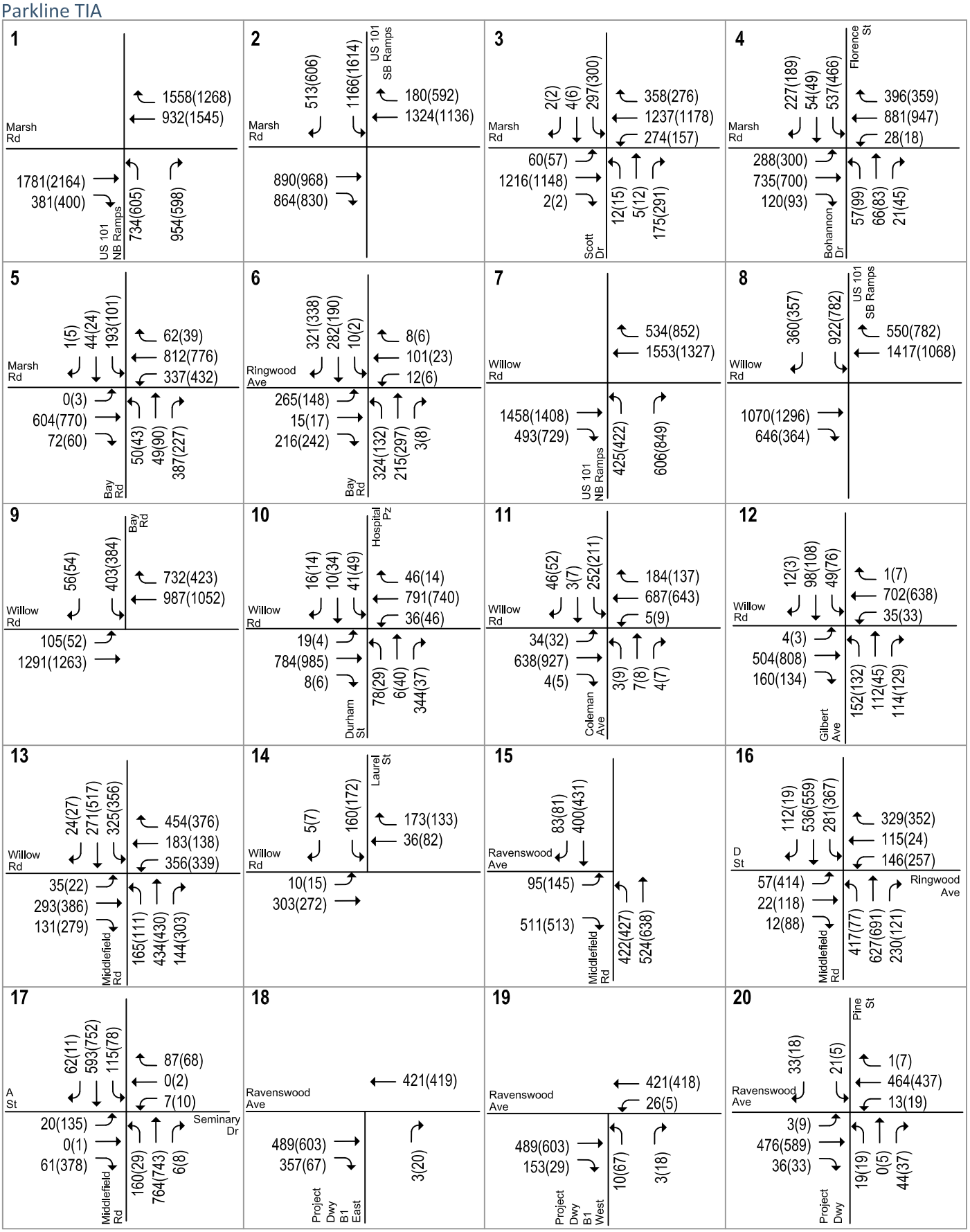
NORTH
Not to Scale



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 10
Cumulative Traffic Volumes



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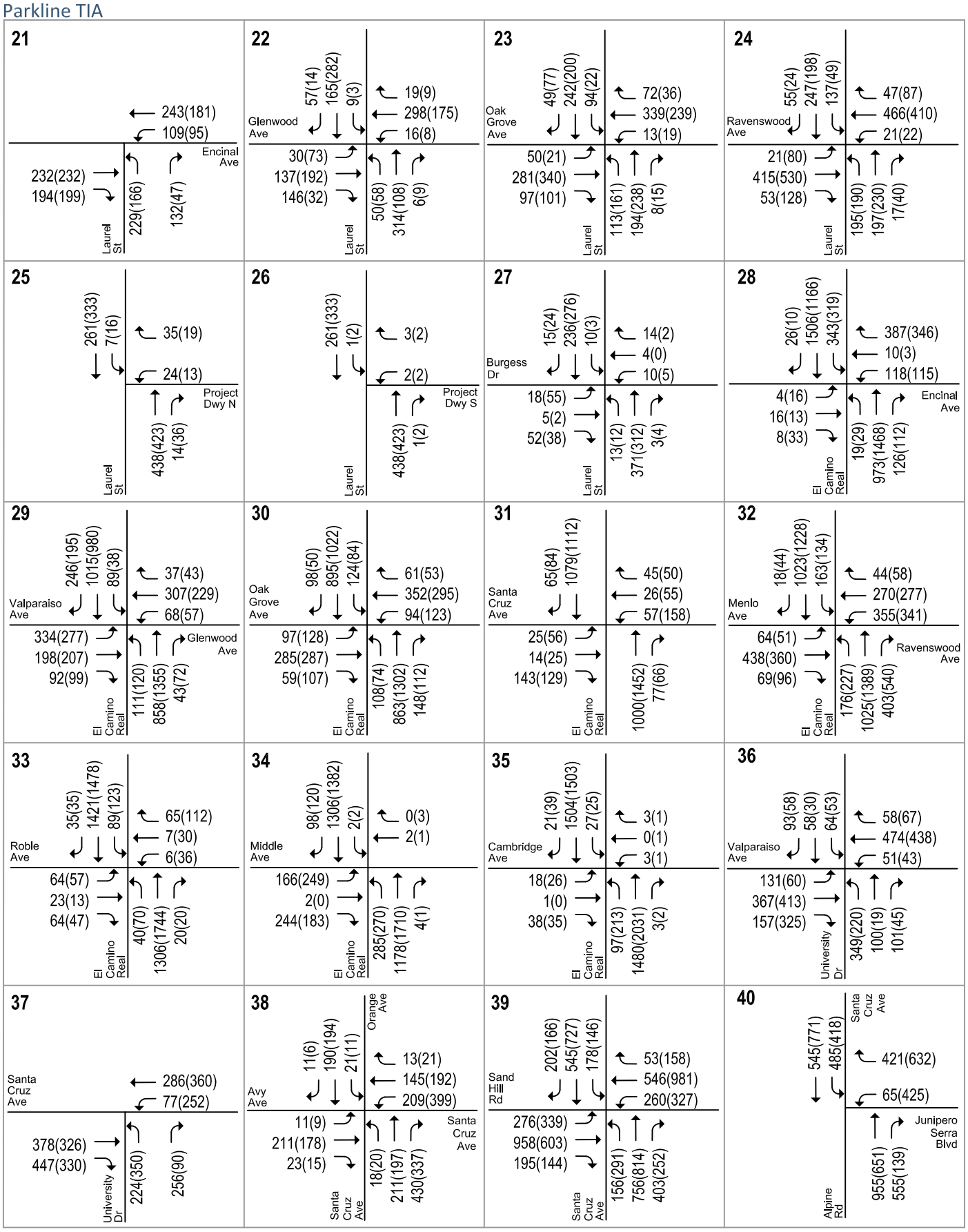
XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 11
Cumulative Plus Project Traffic Volumes



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XX(XX) = AM(PM) Peak-Hour Traffic Volumes

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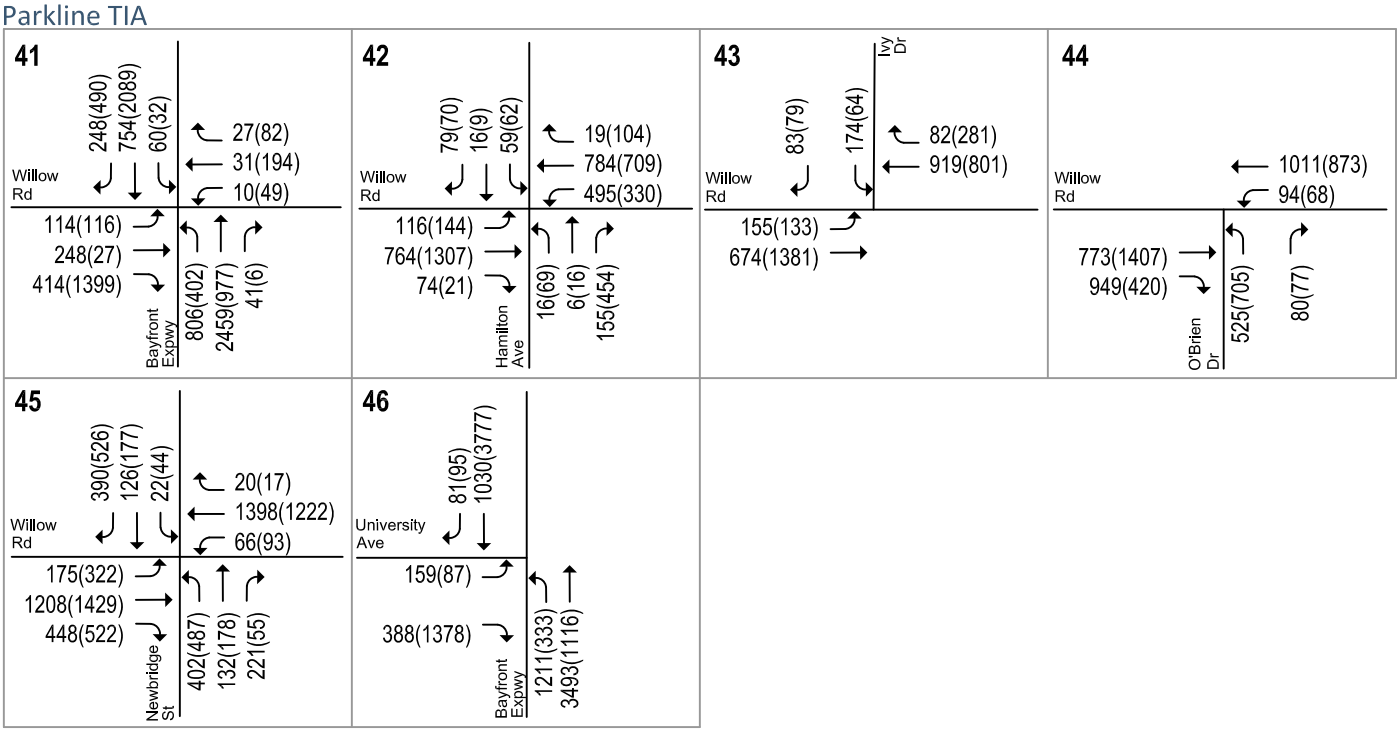
Cumulative Plus Project Traffic Volumes

NORTH
Not to Scale



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 11
Cumulative Plus Project Traffic Volumes

- **18. Project Driveway B1 East and Ravenswood Avenue:** The Project driveway is proposed to be the south leg of the unsignalized intersection as a stop-controlled approach with right turns only for trips in and out of the driveway. The Project driveway approach would have one right-turn lane. The lane configurations for the other approaches would remain the same.
- **19. Project Driveway B1 West and Ravenswood Avenue:** The Project driveway is proposed to be the south leg of the unsignalized intersection as a stop-controlled approach. The Project driveway approach would have one left-turn lane and one right-turn lane. The lane configurations for the other approaches would remain the same.
- **20. Pine Street and Ravenswood Avenue:** The Project driveway is proposed to be the south leg of the unsignalized intersection as a stop-controlled approach. The Project driveway approach would have one shared left -right lane. There would be no through movement from the Project driveway to Pine Street. The lane configurations for the other approaches would remain the same.

Cumulative (2040) Conditions

The transportation network under cumulative (2040) conditions is assumed to include the improvements under near-term conditions. The following additional road improvement proposed by the Willow Village Campus is also assumed:

- **Hamilton Avenue and Willow Road:** Hamilton Avenue would be realigned, and a south leg that would provide access to the Willow Village Project Site would be added to the intersection. The south leg is identified as Main Street. The proposed lane configuration for the intersection would be modified to a northbound left-turn lane and shared through-right lane, a southbound left-turn lane and shared through-right lane, an eastbound left-turn lane, through lane, and shared through-right lane, and two westbound left-turn lanes, a through lane, and a shared through-right turn lane.

Cumulative (2040) plus Project Conditions

The transportation network under cumulative (2040) plus project conditions is assumed to include the Proposed Project improvements described under the near-term plus project conditions. The roadway network for other study intersections is assumed to be the same as under cumulative (2040) conditions.

Near-Term (2027) Intersection Levels of Service

The results of the intersection level of service analysis under near-term conditions show that following study intersections would operate at an unacceptable level of service during at least one peak hour (see Table 11 and Figure 12):

6. Bay Road and Ringwood Avenue (AM peak hour)
7. US 101 Northbound Ramps and Willow Road (AM and PM peak hours)
8. US 101 Southbound Ramps and Willow Road (AM and PM peak hours)
9. Bay Road and Willow Road (AM and PM peak hours)
10. Durham Street and Willow Road (AM and PM peak hours)
41. Bayfront Expressway and Willow Road (AM and PM peak hours)
42. Hamilton Avenue and Willow Road (AM and PM peak hours)
43. Ivy Drive and Willow Road (AM and PM peak hours)
44. O'Brien Drive and Willow Road (AM and PM peak hours)
45. Newbridge Street and Willow Road (AM and PM peak hours)
46. Bayfront Expressway and University Avenue (PM peak hour)

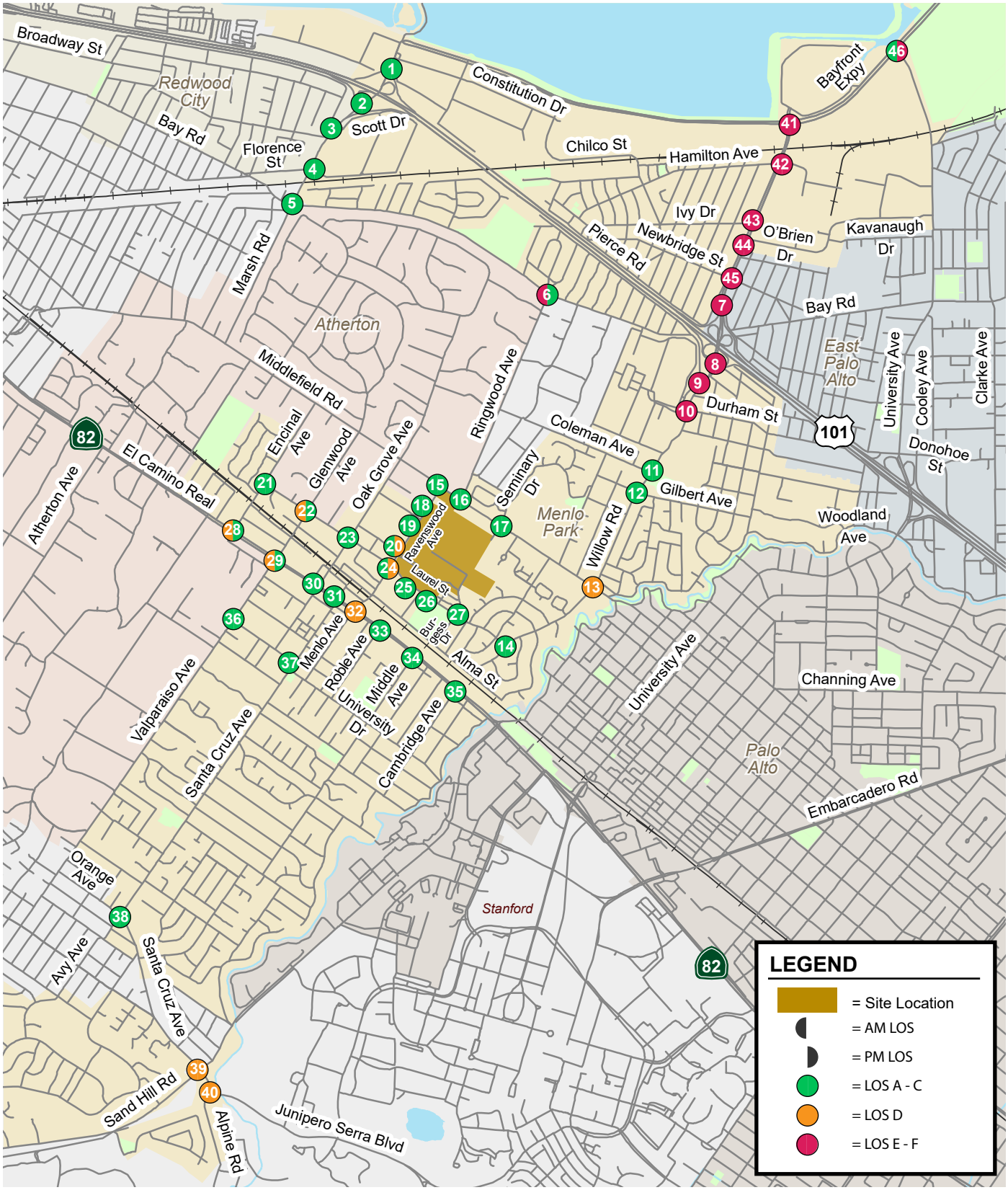


Figure 12
Near-Term Intersection Level of Service Summary

The intersection level of service calculation sheets for the intersection analyzed using the VISTRO software are included in Appendix C.

It should be noted that based on previous micro-simulation analysis conducted along the Willow Road corridor in 2019/2020 timeframe, operations along Willow Road could quickly deteriorate from acceptable levels of service to a severely congested state with the addition of more peak direction traffic in the near-term scenario. A severely congested corridor would result in the actual traffic demand at the intersection not being able to get pass through the intersection within an hour. Therefore, based on results from the previous Willow Road corridor simulation analysis, the Willow Road study intersections in this report are assumed to operate at an oversaturated state under near-term conditions. These intersections would operate at LOS F and are indicated using 'OVERSAT' in the level of service summary tables below.

The results of the SimTraffic micro-simulation analysis for traffic operations on Middlefield Road and Ravenswood Avenue show that the study intersections #15, #16, #17, #19, #20, and #24 would operate at acceptable conditions during both peak hours.

Near-Term (2027) Plus Project Intersection Levels of Service

The results of the intersection level of service analysis under near-term (2027) plus project conditions show that the following intersections (see Table 11 and Figure 13) would be non-compliant with local policies and would be adversely affected during either the AM or the PM peak hour as compared to near-term conditions:

6. **Bay Road and Ringwood Avenue (AM peak hour)**
7. **US 101 Northbound Ramps and Willow Road (AM peak hour)**
9. **Bay Road and Willow Road (AM and PM peak hours)**
10. **Durham Street and Willow Road (AM and PM peak hours)**
13. Middlefield Road and Willow Road (AM and PM peak hours)
22. Laurel Street and Glenwood Avenue (AM peak hour)
44. **O'Brien Drive and Willow Road (AM and PM peak hours)**
45. **Newbridge Street and Willow Road (PM peak hour)**
46. **Bayfront Expressway and University Avenue (PM peak hour)**

Bold indicates intersections that already operate unacceptably under near-term conditions.

The results of the micro-simulation analysis for traffic operations on Middlefield Road and Ravenswood Avenue show that the following intersections would degrade from acceptable conditions to unacceptable conditions during at least one of the peak hours with the Proposed Project. Therefore, these intersections would be non-compliant with local policies and would be adversely affected by the Proposed Project. The micro-simulation methodology, assumptions, and analysis results are documented in Appendix B.

15. Middlefield Road and Ravenswood Avenue (AM and PM peak hours)
16. Middlefield Road and D Street/Ringwood Avenue (AM and PM peak hours)
17. Middlefield Road and Seminary Drive (AM and PM peak hours)
19. Project Driveway B1 West and Ravenswood Avenue (PM peak hour)
20. Project Driveway/Pine Street and Ravenswood Avenue (PM peak hour)

The intersection level of service calculation sheets for the intersection analyzed using the VISTRO software are included in Appendix C.

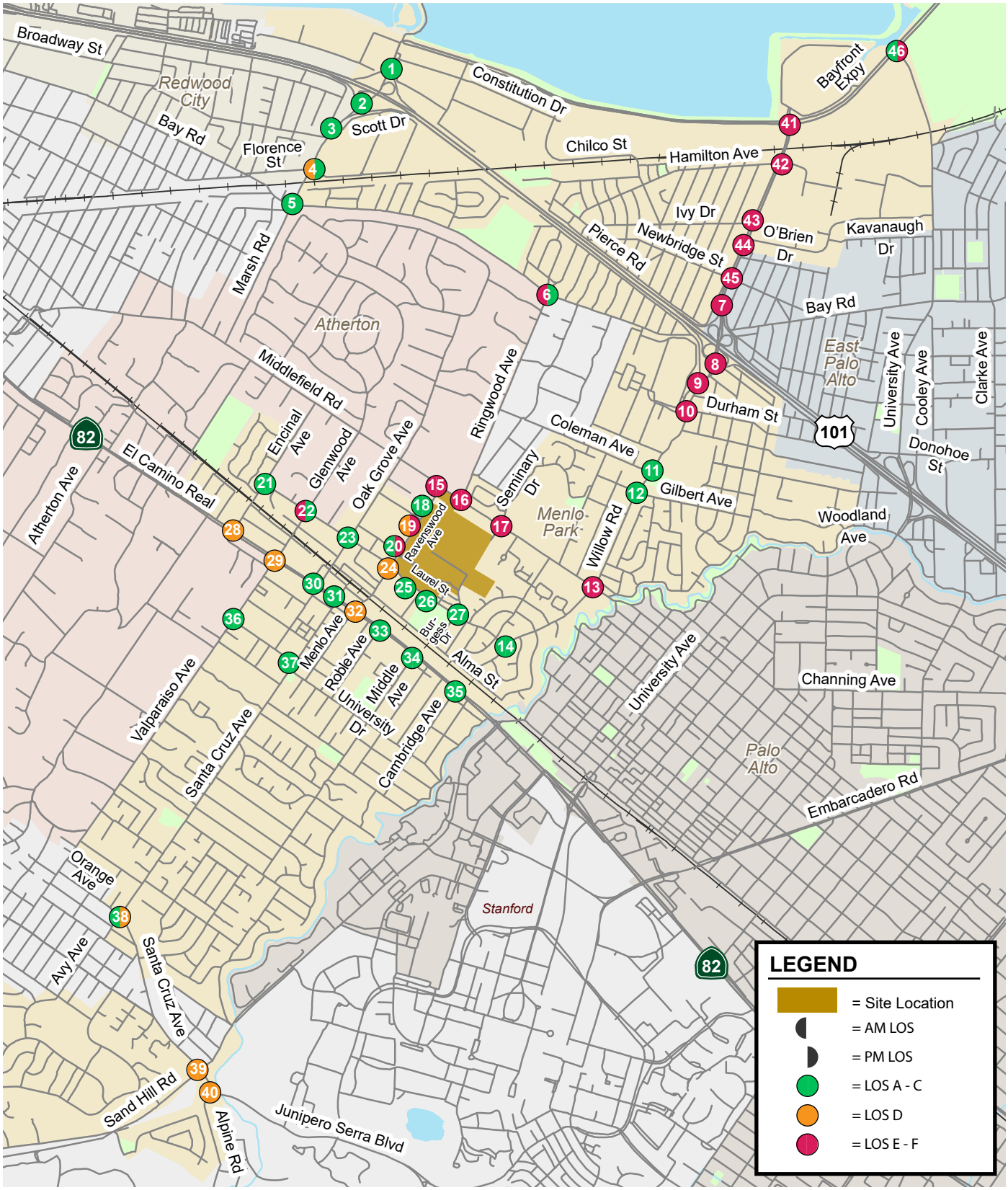


Figure 13
Near-Term Plus Project Intersection Level of Service Summary

Table 11
Near-Term (2027) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Conditions[2] No Project Avg. Delay (sec)[1]	LOS	Project Conditions[3] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
1	US 101 NB Off-Ramp & Marsh Rd	AM	Signal	17.5	B	17.5	B	<4	<0.8			
		PM		20.5	C	20.8	C	<4	<0.8			
2	US 101 SB Off-Ramp & Marsh Rd	AM	Signal	22.2	C	25.4	C	<4	6.3			
		PM		23.0	C	23.2	C	<4	<0.8			
3	Scott Dr & Marsh Rd	AM	Signal	22.9	C	22.8	C	<4	<0.8			
		PM		24.5	C	24.3	C	<4	<0.8			
4	Florence St/Bohannon Dr & Marsh Rd	AM	Signal	34.6	C	35.9	D	<4	3.3			
		PM		33.6	C	34.1	C	<4	1.3			
5	Bay Rd & Marsh Rd	AM	Signal	18.4	B	18.5	B	<4	<0.8			
		PM		21.5	C	21.9	C	<4	<0.8			
6	Bay Rd & Ringwood Ave	AM	AWSC	**60.2**	**F**	**89.2**	**F**	29.0	29.0	*No feasible improvement*		
		PM		14.1	B	18.5	C	4.4	4.4			
7	US 101 NB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	4.2	1.9	*No feasible improvement*		
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
8	US 101 SB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
9	Bay Rd & Willow Rd	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	60.2	65.1	*No feasible improvement*		
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	4.0			
10	Durham St & Willow Rd	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	51.3	86.8	**OVERSAT**	**F**	99.0
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	0.8	**OVERSAT**	**F**	<0.8
11	Coleman Ave & Willow Rd	AM	Signal	15.0	B	20.5	C	5.5	7.2			
		PM		13.7	B	19.6	B	5.9	8.5			
12	Gilbert Ave & Willow Rd	AM	Signal	14.7	B	18.3	B	<4	5.9			
		PM		12.3	B	24.8	C	12.5	20.3			
13	Middlefield Rd & Willow Rd	AM	Signal	50.9	D	**68.6**	**E**	17.7	34.8	*No feasible improvement*		
		PM		53.7	D	**61.7**	**E**	8.0	10.0			
14	Laurel St & Willow Rd	AM	AWSC	10.0	B	10.4	B	<4	<0.8			
		PM		10.1	B	10.4	B	<4	<0.8			
15	Middlefield Rd & Ravenswood Ave[5]	AM	Signal	34.9	C	**80.4**	**F**	45.5	--	**57.5**	**E**	--
		PM		31.5	C	**59.2**	**E**	27.7	--	31.8	C	--
16	Middlefield Rd & D St/Ringwood Ave[5]	AM	Signal	32.4	C	**60.5**	**E**	28.1	--	**71.6**	**E**	--
		PM		27.1	C	**OVERSAT**	**F**	>4	--	**>120**	**F**	--

Table 11 (Continued)
Near-Term (2027) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Conditions[2] No Project Avg. Delay (sec)[1]	No Project LOS	Project Conditions[3] Avg. Delay (sec)[1]	Project Conditions LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	With Improvement LOS	With Improvement Incr. in Avg. Critical Delay
17	Middlefield Rd & Seminary Dr [5]	AM	TWSC	9.8	A	**OVERSAT**	**F**	>4	--	-	-	--
		PM		11.8	B	**OVERSAT**	**F**	>4	--	-	-	--
18	Proj Dwy B1 E & Ravenswood Ave [5]	AM	Signal	Project Dwy		7.2	A	7.2	-	8.1	C	--
		PM				11.4	B	11.4	-	21.5	D	--
19	Proj Dwy B1 West & Ravenswood Ave [5]	AM	TWSC	Project Dwy		26.3	B	26.3	--	16.9	A	--
		PM				**58.9**	**F**	58.9	--	30.5	D	--
20	Proj Dwy/Pine St & Ravenswood Ave [5]	AM	TWSC	18.9	C	24.2	C	5.4	--	**39.8**	**E**	--
		PM		30.4	D	**OVERSAT**	**F**	>4	--	**58.1**	**F**	--
21	Laurel St & Encinal Ave	AM	AWSC	18.5	C	20.2	C	<4	1.7			
		PM		9.8	A	10.8	B	<4	1.0			
22	Laurel St & Glenwood Ave	AM	AWSC	33.0	D	**58.9**	**F**	25.9	25.9	16.2	C	<0.8
		PM		9.8	A	10.5	B	<4	<0.8	11.8	B	2.3
23	Laurel St & Oak Grove Ave	AM	Signal	20.5	C	22.7	C	<4	2.2			
		PM		16.0	B	17.5	B	<4	1.6			
24	Laurel St & Ravenswood Ave [5]	AM	Signal	33.8	C	44.6	D	10.8	--	38.7	D	--
		PM		49.4	D	52.4	D	<4	--	46.6	D	--
25	Laurel St & Proj Dwy N	AM	TWSC	0.0	A	12.4	B	12.4	12.4			
		PM		0.0	A	12.6	B	12.6	12.6			
26	Laurel St & Proj Dwy S	AM	TWSC	8.9	A	9.1	A	<4	<0.8			
		PM		9.0	A	9.3	A	<4	<0.8			
27	Laurel St & Burgess Dr	AM	AWSC	9.2	A	9.5	A	<4	<0.8			
		PM		9.1	A	9.6	A	<4	<0.8			
28	El Camino Real & Encinal Ave	AM	Signal	49.9	D	47.6	D	<4	32.1			
	Menlo College Northbound			*47.0*	*D*	*47.0*	*D*	*<4*	*<0.8*			
	Encinal Ave Southbound			***>120***	***F***	***>120***	***F***	*<4*	*<0.8*			
		PM	Signal	30.3	C	36.3	D	6.0	2.8			
	Menlo College Northbound			*40.2*	*D*	*40.6*	*D*	*<4*	*<0.8*			
	Encinal Ave Southbound			***>120***	***F***	***>120***	***F***	*16.3*	*32.2*			

Table 11 (Continued)
Near-Term (2027) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Conditions[2]								
				No Project		Project Conditions[3]				With Improvement[4]		
				Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
29	El Camino Real & Glenwood Ave	AM	Signal	*48.2*	D	52.1	D	<4	1.5			
	Valparaiso Ave Northbound			***60.3***	***E***	***60.3***	***E***	*<4*	*<0.8*			
	Glenwood Ave Southbound			***60.9***	***E***	***61.0***	***E***	*<4*	*<0.8*			
		PM	Signal	33.8	C	35.7	D	<4	3.0			
	Valparaiso Ave Northbound			***63.8***	***E***	***64.0***	***E***	*<4*	*<0.8*			
	Glenwood Ave Southbound			***66.6***	***E***	***65.9***	***E***	*<4*	*<0.8*			
30	El Camino Real & Oak Grove Ave	AM	Signal	34.6	C	34.3	C	<4	<0.8			
	Oak Grove Ave Northbound			***56.4***	***E***	***56.4***	***E***	*<4*	*<0.8*			
	Oak Grove Ave Southbound			***66.0***	***E***	***65.5***	***E***	*<4*	*<0.8*			
		PM	Signal	26.0	C	26.2	C	<4	<0.8			
	Oak Grove Ave Northbound			***68.0***	***E***	***68.1***	***E***	*<4*	*<0.8*			
	Oak Grove Ave Southbound			***71.4***	***E***	***71.1***	***E***	*<4*	*<0.8*			
31	El Camino Real & Santa Cruz Ave	AM	Signal	8.2	A	7.8	A	<4	<0.8			
	Santa Cruz Ave Northbound			***67.3***	***E***	***67.3***	***E***	*<4*	*<0.8*			
	Santa Cruz Ave Southbound			***68.2***	***E***	***68.2***	***E***	*<4*	*<0.8*			
		PM	Signal	7.8	A	7.7	A	<4	<0.8			
	Santa Cruz Ave Northbound			***73.5***	***E***	***73.5***	***E***	*<4*	*<0.8*			
	Santa Cruz Ave Southbound			***73.4***	***E***	***73.4***	***E***	*<4*	*<0.8*			
32	El Camino Real & Ravenswood Ave	AM	Signal	42.0	D	53.5	D	11.5	47.0			
	Menlo Ave Northbound			***90.3***	***F***	***104.8***	***F***	*14.5*	*15.5*			
	Ravenswood Ave Southbound			***60.4***	***E***	***62.2***	***E***	*<4*	*2.1*			
		PM	Signal	36.2	D	41.9	D	5.7	7.1			
	Menlo Ave Northbound			***65.5***	***E***	***65.5***	***E***	*<4*	*<0.8*			
	Ravenswood Ave Southbound			***55.8***	***E***	***57.5***	***E***	*<4*	*1.1*			
33	El Camino Real & Roble Ave	AM	Signal	6.6	A	6.2	A	<4	6.0			
	Roble Ave Northbound			***66.4***	***E***	***66.4***	***E***	*<4*	*<0.8*			
	Roble Ave Southbound			***63.3***	***E***	***63.3***	***E***	*<4*	*<0.8*			
		PM	Signal	9.7	A	9.4	A	<4	<0.8			
	Roble Ave Northbound			***71.0***	***E***	***71.0***	***E***	*<4*	*<0.8*			
	Roble Ave Southbound			***62.3***	***E***	***62.3***	***E***	*<4*	*<0.8*			
34	El Camino Real & Middle Ave	AM	Signal	16.1	B	15.3	B	<4	<0.8			
	Middle Ave Northbound			***62.9***	***E***	***62.9***	***E***	*<4*	*<0.8*			
		PM	Signal	18.1	B	18.1	B	<4	<0.8			
	Middle Ave Northbound			***62.2***	***E***	***62.2***	***E***	*<4*	*<0.8*			

Table 11 (Continued)
Near-Term (2027) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Conditions[2] No Project Avg. Delay (sec)[1]	LOS	Project Conditions[3] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
35	El Camino Real & Cambridge Ave	AM	Signal	5.1	A	4.8	A	<4	<0.8			
	Cambridge Ave Northbound			***64.5***	***E***	***64.5***	***E***	*<4*	*<0.8*			
		PM	Signal	5.9	A	5.7	A	<4	<0.8			
	Cambridge Ave Northbound			***69.2***	***E***	***69.2***	***E***	*<4*	*<0.8*			
36	University Dr & Valparaiso Ave	AM	Signal	17.2	B	17.8	B	<4	<0.8			
		PM		14.3	B	14.6	B	<4	<0.8			
37	University Dr & Santa Cruz Ave	AM	Signal	9.9	A	10.1	B	<4	<0.8			
		PM		11.2	B	11.7	B	<4	<0.8			
38	Orange Ave/Santa Cruz Ave/Avy Ave	AM	AWSC	20.2	C	21.9	C	<4	1.7			
		PM		23.2	C	27.3	D	4.1	4.1			
39	Santa Cruz Ave & Sand Hill Rd	AM	Signal	46.5	D	47.2	D	<4	2.5			
		PM		41.5	D	41.9	D	<4	<0.8			
40	Santa Cruz Ave & Junipero Serra Blvd	AM	Signal	36.5	D	36.5	D	<4	<0.8			
		PM		38.9	D	39.3	D	<4	<0.8			
41	Bayfront Expwy & Willow Rd (SR 114)*	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
42	Hamilton Ave & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	7.9	20.0			
	Hamilton Ave Northbound			*30.7*	*C*	*30.7*	*C*	*<4*	*<0.8*			
	Hamilton Ave Southbound			*40.4*	*D*	*40.4*	*D*	*<4*	*<0.8*			
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	8.2	5.4			
	Hamilton Ave Northbound			***>120***	***F***	***>120***	***F***	*<4*	*<0.8*			
	Hamilton Ave Southbound			***>120***	***F***	***>120***	***F***	*<4*	*<0.8*			
43	Ivy Dr & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	3.8			
	Ivy Dr Southbound			***76.4***	***E***	***76.4***	***E***	*<4*	*<0.8*			
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	9.8	15.9			
	Ivy Dr Southbound			***66.8***	***E***	***66.8***	***E***	*<4*	*<0.8*			
44	O'Brien Dr & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	4.4			
	O'Brien Dr Northbound			***110.9***	***F***	***117.8***	***F***	*6.9*	*6.8*	*Willow corridor improvements + Multimodal improvements*		
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	11.9	20.4			
	O'Brien Dr Northbound			***>120***	***F***	***>120***	***F***	*8.4*	*8.4*			

Table 11 (Continued)
Near-Term (2027) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Conditions[2]								
				No Project		Project Conditions[3]				With Improvement[4]		
				Avg. Delay (sec)[1]	LOS	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
45	Newbridge St & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	115.5	68.6	*Willow corridor improvements + Multimodal improvements*		
	Bay Rd Northbound			***81.4***	***F***	*39.9*	*D*	*<4*	*<0.8*			
	Newbridge St Southbound			***118.9***	***F***	***62.1***	***E***	*<4*	*<0.8*			
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	96.6	80.1			
	Bay Rd Northbound			*33.1*	*C*	*41.3*	*D*	*8.2*	*<0.8*			
	Newbridge St Southbound			***59.8***	***E***	***79.9***	***E***	*20.1*	*17.8*			
46	Bayfront Expwy & University Ave*	AM	Signal	16.2	B	16.5	B	<4	<0.8	No Feasible Improvement		
		PM		**97.5**	**F**	**101.5**	**F**	4.0	5.3			

Notes:

* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control.

[1] Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

[2] Average delay and level of service for the study intersections (7, 8, 41-45) were based off the microsimulation analysis conducted for the Willow Village project. Intersections that showed OVERSAT and LOS F were assumed to operate the same for this project and under project conditions. For intersections that were not shown OVERSAT and LOS F in the Willow Village project, the results from the VISTRO analysis done for this project are reported. "OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

[3] This assumes 100% office scenario.

[4] The intersection delay for intersections under project conditions with improvement is compared to without project conditions.

[5] Intersections fronting the project site are analyzed using a microsimulation model. A cumulative analysis is not completed. Certain intersections would experience capacity issues where the demand cannot be served by the intersection, and are indicated with OVERSAT. Oversaturated intersections would operate at LOS F.

Bold indicates substandard level of service

Bold indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

It should be noted that at some intersections the average delay is shown to decrease with the addition of Project traffic. This occurs because the intersection delay is a weighted average of all intersection movements. When traffic is added to movements with delays lower than the average intersection delay, the average delay for the entire intersection can decrease. Furthermore, the congestion and queue spillback at an adjacent intersection can constrain the traffic volume at some intersections resulting in a small decrease in average delay.

Adverse Effects and Recommended Improvements

The intersection effects and recommended modifications to improve the intersections to pre-Project conditions or better are described below. It should be noted that the intersection analysis accounts for the Proposed Project's 25% TDM trip reductions from ITE trip generation after crediting internalization.

The office component's proposed TDM reduction of 28% would result in approximately 48 fewer trips during the AM peak hour and 46 fewer trips during the PM peak hour for the 100% office scenario. This level of trip reduction would not address any intersection adverse effects alone.

A sensitivity analysis was conducted to test whether assuming R&D land use, and/or a higher TDM trip reduction would eliminate any adverse effects. The scenarios tested included the following:

- 100% R&D land use instead of office land use
- Higher TDM trip reduction (up to 40%)
- A combination of the two

The analysis showed that the tested scenarios would not eliminate any adverse effects. Potential physical intersection improvements are discussed below.

Bay Road and Ringwood Avenue (#6)

This intersection is expected to operate at an unacceptable LOS F during the AM peak hour and an acceptable LOS B during the PM peak hour under near-term conditions. The addition of Project traffic would cause the average critical delay to increase by more than 0.8 seconds during the AM peak hour. The intersection would continue to operate at an acceptable LOS C during the PM peak hour. This constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

Since the intersection currently operates as all-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. The intersection would meet the MUTCD signal warrant during both peak hours under project conditions (see Appendix E). However, to effectively operate the signalized intersection, it would be necessary to close off Sonoma Avenue from the intersection or convert Sonoma Avenue/Ringwood Avenue to one-way streets, so the intersection would operate as a four-leg intersection. Restricting the access to Sonoma Avenue from the intersection would require additional outreach and a traffic signal is not recommended at this time. Other physical improvements to increase the intersection capacity are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel at the intersection.

Willow Road Corridor (#7, #9, #10, #44, #45)

Willow Road between Bayfront Expressway and Durham Street/Hospital Plaza is expected to experience capacity issues due to unserved demand at the intersections. These intersections would operate unacceptably under near-term conditions during both peak hours. With the addition of Project traffic, intersections along the corridor would continue to operate unacceptably during both peak hours.

The intersections of Willow Road and US 101 northbound ramps would experience an increase in delay of over four seconds with the addition of project traffic in the AM peak hour and PM peak hour, respectively, and would be non-compliant per Menlo Park's guidelines for state-controlled intersections.

The intersections of Bay Road and Durham Street at Willow Road would experience an increase in average critical delay of over 0.8 seconds with the addition of project traffic in both peak hours, the intersection of O'Brien Drive at Willow Road would experience an increase in delay of over 0.8 seconds with the addition of Project traffic on the local approach to the intersection in both peak hours, and the intersection of Newbridge Street at Willow Road would experience an increase in delay of over 0.8 seconds with the addition of Project traffic on the local approach to the intersection during the PM peak hour, which would be non-compliant per Menlo Park's guidelines.

The City of Menlo Park is implementing an adaptive traffic signal coordination system on the Willow Road corridor to improve traffic flow. Adaptive traffic control is a technology that automatically adjusts traffic signal timing based on actual traffic demand at an intersection. This measure will improve the intersection operations and could reduce the intersection delay. The reduction in delay due to adaptive signal coordination is not expected to bring the corridor intersections into compliance with the City's TIA guidelines or to substantially reduce the delay caused by the Proposed Project.

Physical intersection improvements that would improve intersection operations at the non-compliant intersections are:

- **Willow Road and Bay Road (#9) –** The City's TIF program proposes to modify the southbound approach at this intersection to two left-turn lanes and one right-turn lane and to modify the westbound approach to add a right-turn lane. However, this improvement would require removing trees in the median and adjacent to the intersection, which is undesirable. Therefore, the improvement is not recommended.
- **Durham Street and Willow Road (#10) –** The recommended improvement measure for this intersection is restriping southbound Hospital Plaza to include one left-turn and one shared through-right lane. The excess space could be repurposed for a right-turn lane (and the shared through-right lane would become a dedicated through lane), or redesigned for pedestrian infrastructure such as widened sidewalk or a bulb-out. North/south legs would operate with protected phasing instead of split phasing. Signal modifications would be needed. The northbound and southbound left-turns may require lead/lag depending on the final design of the intersection if there is insufficient space for both left-turns to turn at the same time. With this improvement, the AM peak hour would continue to be non-compliant, but the Project's non-compliance during the PM peak hour would be eliminated. If this recommended improvement measure is implemented, the Project should contribute its fair share towards the improvement. Fair share is calculated as the percentage of net project traffic generated of the overall cumulative traffic growth at this intersection.

Physical improvements are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel at the intersections of US 101 northbound ramps, O'Brien Drive, and Newbridge Street at Willow Road.

The TIF program also proposes multi-modal improvements along this section of Willow Road. These include an eastbound Willow Road one-way Class IV separated bikeway between Hamilton Avenue and the US 101/Willow Road Interchange, a westbound Willow Road one-way Class IV separated bikeway between the Dumbarton Rail Corridor and the US 101/Willow Road Interchange, high-visibility crosswalks and pedestrian signals on all legs at the intersection of Willow Road and O'Brien Drive, Class II bicycle lanes on eastbound Willow Road from O'Keefe Street to Bay Road, and Class II bicycle lanes on westbound Willow Road from Bay Road to Durham Street. The Class IV bike lanes on Willow

Road would be at same elevation as the sidewalks, which would improve bicycle safety on Willow Road by removing bicycles from vehicular traffic.

Implementing recommended multi-modal facilities along the corridor (from the City's TIF program) could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. With implementation of these multi-modal improvements, the intersection deficiencies could be further reduced and partially address the Proposed Project's share of the non- compliant operations along Willow Road.

Middlefield Road and Willow Road (#13)

This intersection is expected to operate at an acceptable LOS D in both peak hours under near term conditions. The addition of Project traffic would cause the level of service at the intersection to worsen to an unacceptable LOS E in both peak hours. The deterioration of LOS from D to E constitutes non-compliance according to the thresholds established by the City of Menlo Park.

It is infeasible to add lanes to increase the capacity of the intersection. A potential improvement is to convert the traffic signal to a roundabout. However, the improvement would require additional detailed analysis to determine its feasibility. Pedestrian and bicycle travel through a roundabout also needs to be carefully designed.

Laurel Street and Glenwood Avenue (#22)

This intersection is expected to operate at an unacceptable LOS D during the AM peak hour and an acceptable LOS A during the PM peak hour under near-term conditions. With the addition of Project traffic, the intersection would operate at an unacceptable LOS F during the AM peak hour. The intersection would continue to operate at an acceptable LOS B during the PM peak hour. This constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

Since the intersection currently operates as all-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. The intersection would meet the MUTCD signal warrant in the AM peak hour under project conditions (see Appendix E). A traffic signal is not currently desired at this time. There are no other feasible improvements at this intersection within the existing right-of-way.

The City's TIF program also proposes to install sidewalks or an asphalt pathway on western side of Laurel Street between Encinal Avenue and Glenwood Avenue, which could shift some motor vehicle traffic to pedestrian modes of travel, reduce congestion, and partially address the Proposed Project's share of the non-compliant operations at this intersection.

Bayfront Expressway and University Avenue (#46)

This intersection is expected to operate at an acceptable LOS B during the AM peak hour and an unacceptable LOS F during the PM peak hour under near-term conditions. The addition of Project traffic would cause the average critical delay to increase by more than 0.8 seconds during the PM peak hour. The intersection would continue to operate at an acceptable LOS B during the AM peak hour. This constitutes non-compliance during the PM peak hour according to the thresholds established by the City of Menlo Park.

The City's TIF program proposes to evaluate the potential for grade separation to allow conflicting movements to occur simultaneously at the intersection. Although the improvement could potentially improve traffic operation, the improvement is beyond the scope of a single development project.

The Metropolitan Transportation Commission (MTC) Dumbarton Forward project would restripe Bayfront Expressway to add bus-only lanes on the shoulders during peak periods and implement signal timing improvements. The bus-only lanes would generally help the progression of shuttles and buses along the corridor. The signal timing improvements are also assumed to help with the general progression along Bayfront. However, specific details are unknown at this time regarding the improvements at the University Avenue and Bayfront Expressway intersection. The improvements' effectiveness in addressing the Project traffic generated adverse effect on traffic operations at this intersection cannot be determined. Furthermore, since this project is not led by the City of Menlo Park, implementation cannot be guaranteed.

Middlefield Road and Ravenswood Avenue Corridors (#15, #16, #17, #19, #20)

Based on the micro-simulation analysis (included in Appendix B), the following improvements were identified to improve traffic operations along Middlefield Road and Ravenswood Avenue in the immediate project vicinity:

- Changing the east/west phasing at Middlefield Road and Ringwood Avenue (#16) from permitted to split phasing and modifying the signal timings at Middlefield Road & Ravenswood Avenue (#15). The analysis assumed half cycle length at the Middlefield/Ravenswood intersection during the PM peak hour.
- A new traffic signal at Middlefield Road and Seminary Drive (#17) with protected north/south phasing and split east/west phasing and optimized cycle length. See discussion below regarding additional recommendations to prevent cut-through traffic.
- Extension of the northbound left-turn storage length at Middlefield Road and Seminary Drive (#17) from 50 feet to 325 feet.
- Adding center medians with left-turn pockets or two-way left-turn lane along Ravenswood Avenue between the proposed project driveway at W First Street and Laurel Street.

The analysis results show that implementation of these improvements would generally improve traffic flow along the Middlefield Road and Ravenswood Avenue corridors. Intersection average delays and queuing would also generally decrease as a result. The analysis showed overall improvements in percentage of traffic served at the intersections with the identified improvements.

The City of Menlo Park and County of San Mateo are evaluating complete streets improvements along Ringwood Avenue and Coleman Avenue within the vicinity of the project site. These improvements would in general improve road user safety and improve bicycle and pedestrian connectivity. Since the proposed project is located within close proximity to this study area, the Project would also benefit from these improvements. It is recommended that the Project Sponsor coordinate with City staff regarding this corridor study and contribute its fair share towards the identified improvements.

With the proposed signalization of Middlefield Road and Seminary Drive, the likelihood of Seminary Drive becoming a cut-through route for project traffic increases. Seminary Drive is designated as a Bicycle Boulevard in the City's General Plan. Traffic calming measures could be installed to discourage the use of Seminary Drive as a cut-through route. If a traffic signal is installed at Middlefield Road and Seminary Drive, it is recommended that forced turn islands are also installed to restrict through movements along Seminary Drive.

Cumulative (2040) Intersection Levels of Service

The results of the intersection level of service analysis under cumulative conditions are summarized in Table 12. The intersection LOS calculation sheets are included in Appendix C. The following study

intersections (see Figure 14) would operate at an unacceptable level of service during at least one peak hour:

4. Florence Street/Bohannon Drive and Marsh Road (AM peak hour)
6. Bay Road and Ringwood Avenue (AM peak hour)
7. US 101 Northbound Ramps and Willow Road (AM and PM peak hours)
8. US 101 Southbound Ramps and Willow Road (AM and PM peak hours)
9. Bay Road and Willow Road (AM and PM peak hours)
10. Durham Street and Willow Road (AM and PM peak hours)
13. Middlefield Road and Willow Road (AM and PM peak hours)
21. Laurel Street and Encinal Avenue (AM peak hour)
22. Laurel Street and Glenwood Avenue (AM peak hour)
28. El Camino Real and Encinal Avenue (AM peak hour)
36. University Drive and Valparaiso Avenue (AM peak hour)
41. Bayfront Expressway and Willow Road (AM and PM peak hours)
42. Hamilton Avenue and Willow Road (AM and PM peak hours)
43. Ivy Drive and Willow Road (AM and PM peak hours)
44. O'Brien Drive and Willow Road (AM and PM peak hours)
45. Newbridge Street and Willow Road (AM and PM peak hours)
46. Bayfront Expressway and University Avenue (PM peak hour)

Cumulative (2040) Plus Project Intersection Levels of Service

The results of the intersection level of service analysis under cumulative (2040) plus project conditions show that the following intersections would be non-compliant with local policies during either the AM or the PM peak hour as compared to cumulative conditions (see Table 12 and Figure 15).

4. Florence Street/Bohannon Drive and Marsh Road (AM peak hour)
6. Bay Road and Ringwood Avenue (AM and PM peak hours)
7. US 101 Northbound Ramps and Willow Road (AM peak hour)
9. Bay Road and Willow Road (AM peak hour)
10. Durham Street and Willow Road (AM and PM peak hours)
13. Middlefield Road and Willow Road (AM and PM peak hours)
21. Laurel Street and Encinal Avenue (AM peak hour)
22. Laurel Street and Glenwood Avenue (AM peak hour)
32. El Camino Real and Ravenswood Avenue/Menlo Avenue (AM peak hour)
36. University Drive and Valparaiso Avenue (AM and PM peak hours)
38. Santa Cruz Avenue and Avy Avenue (PM peak hour)
44. O'Brien Drive and Willow Road (AM and PM peak hours)
45. Newbridge Street and Willow Road (AM and PM peak hours)
46. Bayfront Expressway and University Avenue (PM peak hour)

Bold denotes intersections that would be non-compliant under cumulative plus project conditions during either AM or PM peak hours but are compliant under near-term plus project conditions during both peak hours.

It should be noted that at some intersections the average delay is shown to decrease with the addition of Project traffic. This occurs because the intersection delay is a weighted average of all intersection movements. When traffic is added to movements with delays lower than the average intersection delay, the average delay for the entire intersection can decrease. Furthermore, the congestion and queue spillback at an adjacent intersection can constrain the traffic volume at some intersections resulting in a small decrease in average delay.

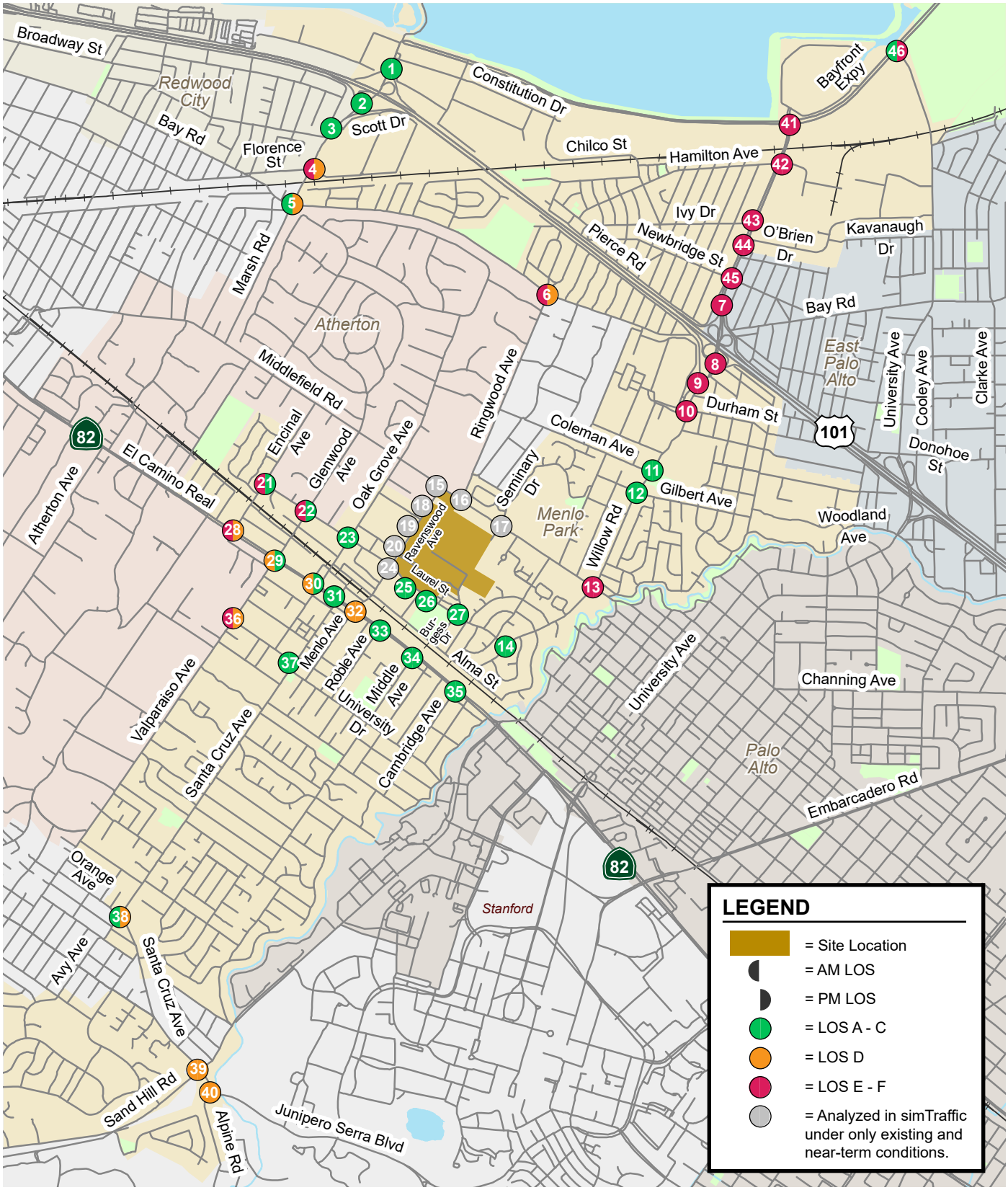


Figure 14
Cumulative (2040) Intersection Level of Service Summary

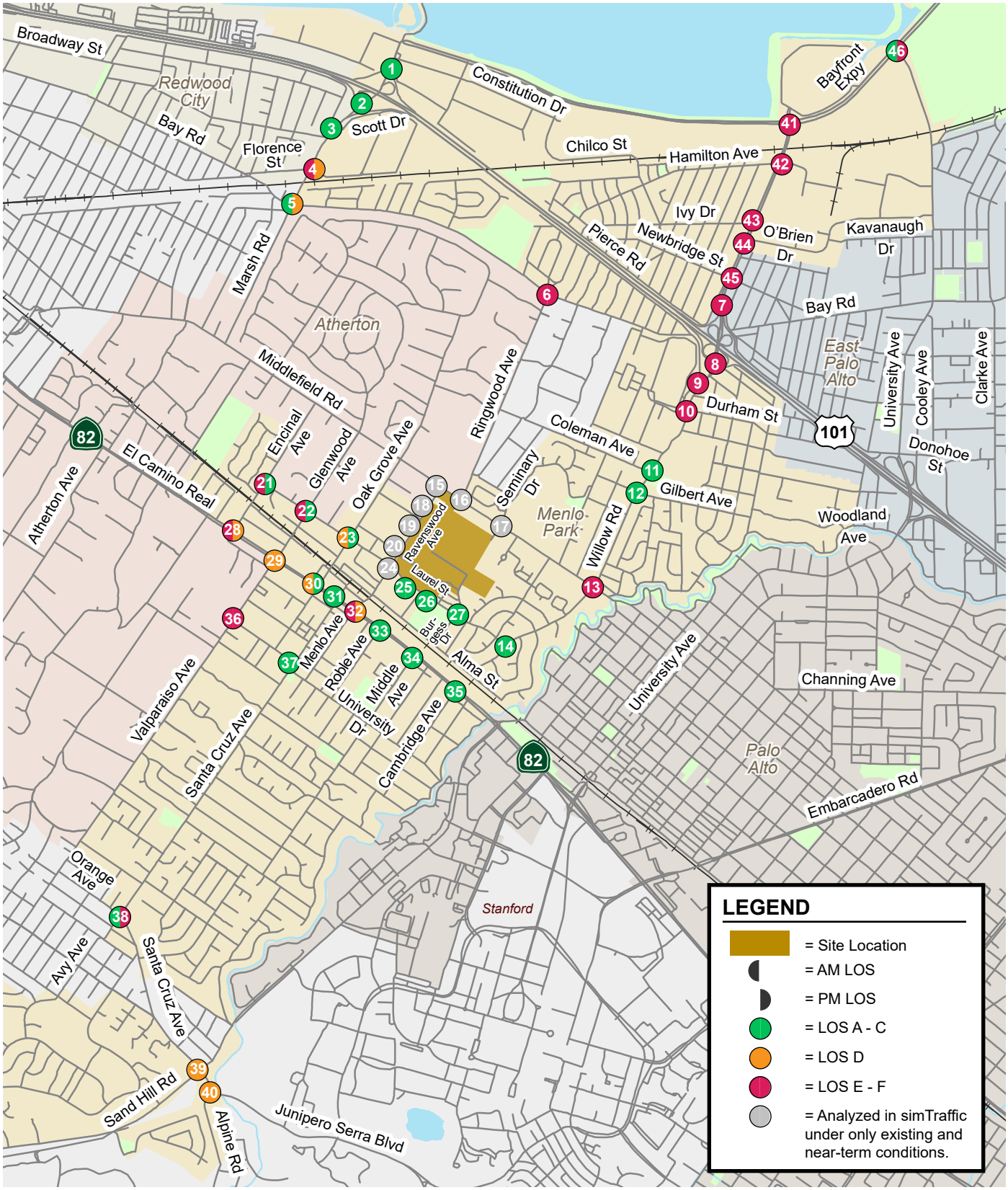


Figure 15
Cumulative (2040) Plus Project Intersection Level of Service Summary

Table 12
Cumulative (2040) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions[2] No Project Avg. Delay (sec)[1]	No Project LOS	Project Conditions[3] Avg. Delay (sec)[1]	Project Conditions[3] LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	With Improvement[4] LOS	With Improvement[4] Incr. in Avg. Critical Delay
1	US 101 NB Off-Ramp & Marsh Rd	AM	Signal	22.6	C	22.7	C	<4	<0.8			
		PM		23.0	C	23.4	C	<4	<0.8			
2	US 101 SB Off-Ramp & Marsh Rd	AM	Signal	21.7	C	23.2	C	<4	<0.8			
		PM		24.3	C	24.5	C	<4	<0.8			
3	Scott Dr & Marsh Rd	AM	Signal	29.0	C	29.0	C	<4	<0.8			
		PM		29.4	C	29.2	C	<4	<0.8			
4	Florence St/Bohannon Dr & Marsh Rd	AM	Signal	**74.0**	**E**	**75.7**	**E**	<4	1.5	*Multimodal improvements*		
		PM		47.3	D	52.6	D	5.3	13.4			
5	Bay Rd & Marsh Rd	AM	Signal	30.6	C	31.3	C	<4	2.2			
		PM		51.1	D	51.5	D	<4	<0.8			
6	Bay Rd & Ringwood Ave	AM	AWSC	**>120**	**F**	**>120**	**F**	29.8	29.8	*No feasible improvement*		
		PM		32.4	D	**47.9**	**E**	15.5	15.5			
7	US 101 NB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	1.2	*No feasible improvement*		
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
8	US 101 SB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
9	Bay Rd & Willow Rd	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	22.3	54.4	*No feasible improvement*		
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
10	Durham St & Willow Rd	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	46.3	83.1	**OVERSAT**	**F**	>120
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	1.5	**OVERSAT**	**F**	<0.8
11	Coleman Ave & Willow Rd	AM	Signal	21.7	C	22.6	C	<4	<0.8			
		PM		18.2	B	19.3	B	<4	<0.8			
12	Gilbert Ave & Willow Rd	AM	Signal	17.4	B	16.7	B	<4	<0.8			
		PM		13.8	B	18.1	B	4.3	7.9			
13	Middlefield Rd & Willow Rd	AM	Signal	**57.8**	**E**	**59.0**	**E**	<4	4.1	*No feasible improvement*		
		PM		**59.0**	**E**	**66.7**	**E**	7.7	10.5			
14	Laurel St & Willow Rd	AM	AWSC	11.3	B	11.7	B	<4	<0.8			
		PM		10.6	B	10.9	B	<4	<0.8			
15	Middlefield Rd & Ravenswood Ave[5]	AM	Signal	see footnote 5								
		PM										

Table 12 (continued)
Cumulative (2040) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions[2] No Project Avg. Delay (sec)[1]	No Project LOS	Project Conditions[3] Avg. Delay (sec)[1]	Project Conditions[3] LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	With Improvement[4] LOS	With Improvement[4] Incr. in Avg. Critical Delay
16	Middlefield Rd & D St/Ringwood Ave [5]	AM	Signal	see footnote 5								
		PM										
17	Middlefield Rd & Seminary Dr [5]	AM	TWSC	see footnote 5								
		PM										
18	Proj Dwy B1 E & Ravenswood Ave [5]	AM	Signal	see footnote 5								
		PM										
19	Proj Dwy B1 West & Ravenswood Ave [5]	AM	TWSC	see footnote 5								
		PM										
20	Proj Dwy/Pine St & Ravenswood Ave [5]	AM	TWSC	see footnote 5								
		PM										
21	Laurel St & Encinal Ave	AM	AWSC	**37.9**	**E**	**46.0**	**E**	8.1	8.1	*Multimodal improvements*		
		PM		12.7	B	14.4	B	<4	1.7			
22	Laurel St & Glenwood Ave	AM	AWSC	**94.8**	**F**	**116.9**	**F**	22.1	22.1	25.3	C	<0.8
		PM		13.2	B	14.5	B	<4	1.3	13.1	B	<0.8
23	Laurel St & Oak Grove Ave	AM	Signal	30.2	C	41.0	D	10.8	12.4			
		PM		26.2	C	30.3	C	4.1	4.6			
24	Laurel St & Ravenswood Ave [5]	AM	Signal	see footnote 5								
		PM										
25	Laurel St & Proj Dwy N	AM	TWSC	0.0	A	15.2	C	15.2	15.2			
		PM		0.0	A	16.0	C	16.0	16.0			
26	Laurel St & Proj Dwy S	AM	TWSC	10.4	B	10.7	B	<4	<0.8			
		PM		10.4	B	11.0	B	<4	<0.8			
27	Laurel St & Burgess Dr	AM	AWSC	11.2	B	11.8	B	<4	<0.8			
		PM		11.3	B	12.2	B	<4	0.9			
28	El Camino Real & Encinal Ave	AM	Signal	**73.6**	**E**	**76.5**	**E**	<4	4.1			
	Menlo College Northbound			*46.8*	*D*	*46.8*	*D*	*<4*	*<0.8*			
	Encinal Ave Southbound			***>120***	***F***	***>120***	***F***	*11.7*	*<0.8*			
		PM	Signal	39.6	D	51.1	D	11.5	3.4			
	Menlo College Northbound			*40.6*	*D*	*40.6*	*D*	*<4*	*<0.8*			
	Encinal Ave Southbound			***>120***	***F***	***>120***	***F***	*54.1*	*<0.8*			

Table 12 (continued)
Cumulative (2040) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions[2] No Project Avg. Delay (sec)[1]	LOS	Project Conditions[3] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
29	El Camino Real & Glenwood Ave	AM	Signal	38.4	D	39.4	D	<4	43.9			
	Valparaiso Ave Northbound			***61.5***	***E***	***62.2***	***E***	*<4*	*1.0*			
	Glenwood Ave Southbound			***65.2***	***E***	***66.1***	***E***	*<4*	*1.6*			
		PM	Signal	33.3	C	35.0	D	<4	2.4			
	Valparaiso Ave Northbound			***63.7***	***E***	***63.8***	***E***	*<4*	*<0.8*			
	Glenwood Ave Southbound			***66.8***	***E***	***66.0***	***E***	*<4*	*<0.8*			
30	El Camino Real & Oak Grove Ave	AM	Signal	36.1	D	36.0	D	<4	11.3			
	Oak Grove Ave Northbound			*52.5*	*D*	*52.5*	*D*	*<4*	*<0.8*			
	Oak Grove Ave Southbound			***65.1***	***E***	***65.2***	***E***	*<4*	*<0.8*			
		PM	Signal	28.4	C	28.6	C	<4	<0.8			
	Oak Grove Ave Northbound			***64.2***	***E***	***64.2***	***E***	*<4*	*<0.8*			
	Oak Grove Ave Southbound			***72.0***	***E***	***70.9***	***E***	*<4*	*<0.8*			
31	El Camino Real & Santa Cruz Ave	AM	Signal	9.2	A	8.7	A	<4	<0.8			
	Santa Cruz Ave Northbound			***66.0***	***E***	***66.0***	***E***	*<4*	*<0.8*			
	Santa Cruz Ave Southbound			***68.2***	***E***	***68.2***	***E***	*<4*	*<0.8*			
		PM	Signal	11.5	B	11.3	B	<4	<0.8			
	Santa Cruz Ave Northbound			***71.2***	***E***	***71.2***	***E***	*<4*	*<0.8*			
	Santa Cruz Ave Southbound			***70.2***	***E***	***70.2***	***E***	*<4*	*<0.8*			
32	El Camino Real & Ravenswood Ave	AM	Signal	51.7	D	**56.9**	**E**	5.2	5.8			
	Menlo Ave Northbound			***>120***	***F***	***>120***	***F***	*24.9*	*25.6*			
	Ravenswood Ave Southbound			***64.6***	***E***	***66.8***	***E***	*<4*	*4.7*	*Multimodal improvements*		
		PM	Signal	40.1	D	43.7	D	<4	1.1			
	Menlo Ave Northbound			***65.8***	***E***	***68.7***	***E***	*<4*	*3.3*			
	Ravenswood Ave Southbound			*54.7*	*D*	***56.4***	***E***	*<4*	*2.1*			
33	El Camino Real & Roble Ave	AM	Signal	9.3	A	8.9	A	<4	6.0			
	Roble Ave Northbound			***65.0***	***E***	***65.0***	***E***	*<4*	*<0.8*			
	Roble Ave Southbound			***57.4***	***E***	***57.4***	***E***	*<4*	*<0.8*			
		PM	Signal	11.9	B	11.4	B	<4	<0.8			
	Roble Ave Northbound			***70.2***	***E***	***70.2***	***E***	*<4*	*<0.8*			
	Roble Ave Southbound			***61.4***	***E***	***61.4***	***E***	*<4*	*<0.8*			

Table 12 (continued)
Cumulative (2040) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions[2] No Project Avg. Delay (sec)[1]	LOS	Project Conditions[3] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
34	El Camino Real & Middle Ave	AM	Signal	20.3	C	19.3	B	<4	<0.8			
	Middle Ave Northbound			***61.6***	***E***	***61.6***	***E***	*<4*	*<0.8*			
		PM	Signal	18.8	B	18.7	B	<4	<0.8			
	Middle Ave Northbound			***62.0***	***E***	***62.0***	***E***	*<4*	*<0.8*			
35	El Camino Real & Cambridge Ave	AM	Signal	5.3	A	5.0	A	<4	<0.8			
	Cambridge Ave Northbound			***64.5***	***E***	***64.5***	***E***	*<4*	*<0.8*			
		PM	Signal	7.6	A	7.4	A	<4	20.1			
	Cambridge Ave Northbound			***69.2***	***E***	***69.2***	***E***	*<4*	*<0.8*			
36	University Dr & Valparaiso Ave	AM	Signal	**90.4**	**F**	**91.1**	**F**	<4	1.5	*No feasible improvement*		
		PM		54.5	D	**56.2**	**E**	<4	2.7			
37	University Dr & Santa Cruz Ave	AM	Signal	11.3	B	11.5	B	<4	<0.8			
		PM		14.7	B	15.5	B	<4	1.0			
38	Orange Ave/Santa Cruz Ave/Avy Ave	AM	AWSC	22.3	C	24.3	C	<4	2.0	22.1	C	16.5
		PM		30.4	D	**35.2**	**E**	4.8	4.8	17.0	B	<0.8
39	Santa Cruz Ave & Sand Hill Rd	AM	Signal	46.9	D	47.5	D	<4	2.6			
		PM		43.1	D	43.5	D	<4	<0.8			
40	Santa Cruz Ave & Junipero Serra Blvd	AM	Signal	38.3	D	38.4	D	<4	<0.8			
		PM		39.6	D	40.0	D	<4	<0.8			
41	Bayfront Expwy & Willow Rd (SR 114)*	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
		PM		**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
42	Hamilton Ave & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	6.6	14.6			
	Hamilton Ave Northbound			***60.6***	***E***	***60.6***	***E***	*<4*	*<0.8*			
	Hamilton Ave Southbound			***66.5***	***E***	*66.5*	*E*	*<4*	*<0.8*			
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	8.5	6.9			
	Hamilton Ave Northbound			***>120***	***F***	***>120***	***F***	*<4*	*<0.8*			
	Hamilton Ave Southbound			***>120***	***F***	***>120***	***F***	*<4*	*<0.8*			

Table 12 (continued)
Cumulative (2040) Intersection Levels of Service

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions[2] No Project Avg. Delay (sec)[1]	LOS	Project Conditions[3] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	With Improvement[4] Avg. Delay (sec)[1]	LOS	Incr. in Avg. Critical Delay
43	Ivy Dr & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	<0.8			
	Ivy Dr Southbound			***76.9***	***E***	***76.9***	***E***	*<4*	*<0.8*			
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	8.5	13.5			
	Ivy Dr Southbound			***66.9***	***E***	***66.9***	***E***	*<4*	*<0.8*			
44	O'Brien Dr & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	<4	2.4			
	O'Brien Dr Northbound			***>120***	***F***	***>120***	***F***	*8.5*	*8.7*	*Willow corridor improvements + Multimodal improvements*		
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	6.6	11.0			
	O'Brien Dr Northbound			***>120***	***F***	***>120***	***F***	*8.5*	*8.7*			
45	Newbridge St & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	76.9	59.8			
	Bay Rd Northbound			*40.2*	*D*	*38.3*	*D*	*<4*	*<0.8*			
	Newbridge St Southbound			***62.4***	***E***	***63.9***	***E***	*<4*	*2.3*	*Willow corridor improvements + Multimodal improvements*		
		PM	Signal	**OVERSAT**	**F**	**OVERSAT**	**F**	18.7	8.1			
	Bay Rd Northbound			*38.9*	*D*	*39.0*	*D*	*<4*	*<0.8*			
	Newbridge St Southbound			***>120***	***F***	***>120***	***F***	*4.3*	*4.4*			
46	Bayfront Expwy & University Ave*	AM	Signal	17.3	B	17.7	B	<4	<0.8	No Feasible Improvement		
		PM		**>120**	**F**	**>120**	**F**	4.1	5.6			

Notes:

* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control.

[1] Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

[2] Average delay and level of service for the study intersections (7, 8, 41-45) were based off the microsimulation analysis conducted for the Willow Village project. Intersections that showed OVERSAT and LOS F were assumed to operate the same for this project and under project conditions. For intersections that were not shown OVERSAT and LOS F in the Willow Village project, the results from the VISTRO analysis done for this project are reported. "OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

[3] This assumes 100% office scenario.

[4] The intersection delay for intersections under project conditions with improvement is compared to without project conditions.

[5] Intersections fronting the project site are analyzed using a microsimulation model. A cumulative analysis is not completed. Certain intersections would experience capacity

Bold indicates substandard level of service

Bold indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

As described in Chapter 1, a SimTraffic micro-simulation analysis was conducted for the study intersections #15, #16, #17, #19, #20, and #24 on Middlefield Road and Ravenswood Avenue to identify potential project effects and improvements along these corridors. While the simulation analysis did not evaluate a cumulative scenario for these intersections, it is expected that the improvements recommended under near-term conditions to be the same as those under cumulative conditions, as there are no additional improvements that can be recommended given the existing right-of-way constraints.

Adverse Effects and Recommended Improvements

For intersections that are non-compliant under both near-term plus project conditions and cumulative plus project conditions, the recommended improvements proposed under near-term plus project conditions would be sufficient to address cumulative non-compliance. Improvements for intersections that are non-compliant only under cumulative plus project conditions are described below.

A sensitivity analysis was conducted to test whether assuming R&D land use, and/or a higher TDM trip reduction would eliminate any adverse effects. The scenarios tested included the following:

- 100% R&D land use instead of office land use
- Higher TDM trip reduction (up to 40%)
- A combination of the two

The analysis showed that the following intersection adverse effects can be eliminated if a lower trip generation level is assumed. The specific lowered trip generation levels are discussed below.

- El Camino Real & Ravenswood Avenue
- Santa Cruz Avenue & Avy Avenue

Bohannon Drive/Florence Street and Marsh Road (#4)

This intersection is expected to operate at an unacceptable LOS E during the AM peak hour and an acceptable LOS D during the PM peak hour under cumulative conditions. The addition of Project traffic would cause the average critical delay to increase by more than 0.8 seconds during the AM peak hour. The intersection would continue to operate at an acceptable LOS D during the PM peak hour. This constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

Modification of the westbound approach at this intersection to a left-turn lane, two through lanes, and a right-turn lane would improve the average delay to better than cumulative no project conditions. However, these improvements are considered infeasible due to right-of-way constraints and adverse effects on pedestrian and bicycle travel.

Menlo Park's TIF program proposes Class II buffered bike lanes along Marsh Road from Bay Road to Scott Road in both directions, which includes this intersection. Implementing recommended multi-modal facilities along the corridor (from the City's TIF program) could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. Implementation of these multi-modal improvements would partially address the Proposed Project's share of the non-compliant operations at this intersection.

Laurel Street and Encinal Avenue (#21)

This intersection is expected to operate at an unacceptable LOS E during the AM peak hour and an acceptable LOS B during the PM peak hour under cumulative conditions. The addition of Project traffic would cause the average critical delay to increase by more than 0.8 seconds during the AM peak hour. The intersection would continue to operate at an acceptable LOS B during the PM peak hour. This

constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

Since the intersection currently operates as all-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. The intersection would meet the MUTCD signal warrant in the AM peak hour under project conditions (see Appendix E). However, the City currently has no plans to install traffic signals at the intersection. Other physical improvements to increase the intersection capacity are considered infeasible due to right-of-way constraints.

The City's TIF program proposes to install sidewalks or an asphalt pathway on western side of Laurel Street between Encinal Avenue and Glenwood Avenue, which could shift some motor vehicle traffic to alternative modes of travel, reduce congestion, and partially address the Proposed Project's share of the non-compliant operations at this intersection.

El Camino Real and Ravenswood Avenue/Menlo Avenue (#32)

This intersection is expected to operate at an acceptable LOS D in both peak hours under cumulative conditions. The addition of Project traffic would cause the level of service at the intersection to worsen to an unacceptable LOS E in the AM peak hour. The intersection would continue to operate at an acceptable LOS D during the PM peak hour. The deterioration of LOS from D to E in the AM peak hour constitutes non-compliance according to the thresholds established by the City of Menlo Park.

The City's TIF program proposes the following multimodal improvements at the intersection:

- On El Camino Real from Santa Cruz Avenue to Ravenswood Avenue/Menlo Avenue, remove parking along west side of street and designate Class III bicycle route northbound along the segment.
- On El Camino Real from Ravenswood Avenue/Menlo Avenue to Roble Avenue, remove median for entire length of the segment and widen sidewalk facility on east side of the street to 15 feet for a Class I multi-use path.
- Install northbound El Camino Real right-turn overlap and bike signal and prohibit right-turn on red movements.
- Remove median on south leg of the intersection and install an additional northbound El Camino Real right-turn lane.
- Transition bicycle lane into bicycle route and install green-backed sharrows on right-turn lane and green conflict striping approaching the right-turn lane on southbound El Camino Real.
- Install high-visibility crosswalk across all legs.

A sensitivity analysis shows that the 100% R&D scenario with 30% TDM trip reductions would be sufficient to avoid the adverse effect of the Proposed Project on intersection operations.

University Drive and Valparaiso Avenue (#36)

This intersection is expected to operate at an unacceptable LOS F during the AM peak hour and an acceptable LOS D during the PM peak hour under cumulative conditions. The addition of Project traffic would cause the average critical delay to increase by more than 0.8 seconds during the AM peak hour and degrade the operations to an unacceptable LOS E during the PM peak hour. This constitutes non-compliance during both peak hours according to the thresholds established by the City of Menlo Park.

Physical improvements at this intersection are considered infeasible due to right-of-way constraints, potential tree removal, and/or adverse effects to pedestrian and bicycle travel.

Santa Cruz Avenue and Avy Avenue (#38)

This intersection is expected to operate at an unacceptable LOS C during the AM peak hour and an acceptable LOS D during the PM peak hour under cumulative conditions. With the addition of Project traffic, the intersection would operate at an unacceptable LOS E during the PM peak hour. The intersection would continue to operate at an acceptable LOS C during the AM peak hour. This constitutes non-compliance during the PM peak hour according to the thresholds established by the City of Menlo Park.

Since the intersection currently operates as all-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. The intersection would meet the MUTCD signal warrant in both peak hours under project conditions (see Appendix E). Periodic monitoring of traffic operations at this intersection should be conducted to determine if signalization is needed. If warranted, implementation of the new traffic signal would address the Proposed Project's share of the non-compliant operation and bring the intersection into compliance with the TIA Guidelines. There are no other feasible improvements at this intersection within the existing right-of-way.

The City's TIF program proposes to reduce the curb radius at the southeast corner of intersection and bring bicycle lane to the left side of the northbound Santa Cruz Avenue right-turn lane, which would improve bicycle travel through the intersection. The City's TIF program also proposes to establish Class II bicycle lanes on Avy Avenue between Santa Cruz Avenue and Monte Rosa Drive by removing on-street parking. Implementing these multi-modal facility improvements could shift some motor vehicle traffic to alternative modes of travel, reduce congestion, and partially address the Proposed Project's share of the non-compliant operations at this intersection.

A sensitivity analysis shows that the 100% R&D scenario with 40% TDM trip reductions would be sufficient to avoid the adverse effect of the Proposed Project on intersection operations.

Intersection Vehicle Queuing

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis for intersection left-turning movements where the Proposed Project would add significant trips per lane in the vicinity of the Project Site and affect intersection operations (see Figure 16). This analysis provides a basis for estimating future storage requirements at these intersections. Vehicle queues were estimated using the methodology described in Chapter 1. The following left-turn movements were selected for evaluation and the vehicle queuing analysis results based on the VISTRO software are summarized in Table 13:

- Northbound left-turn at US 101 Northbound Ramps and Willow Road (#7)
- Southbound left-turn at Bay Road and Willow Road (#9)
- Southbound left-turn at Middlefield Road and Willow Road (#13)
- Southbound and westbound left-turn at El Camino Real and Ravenswood Avenue (#32)

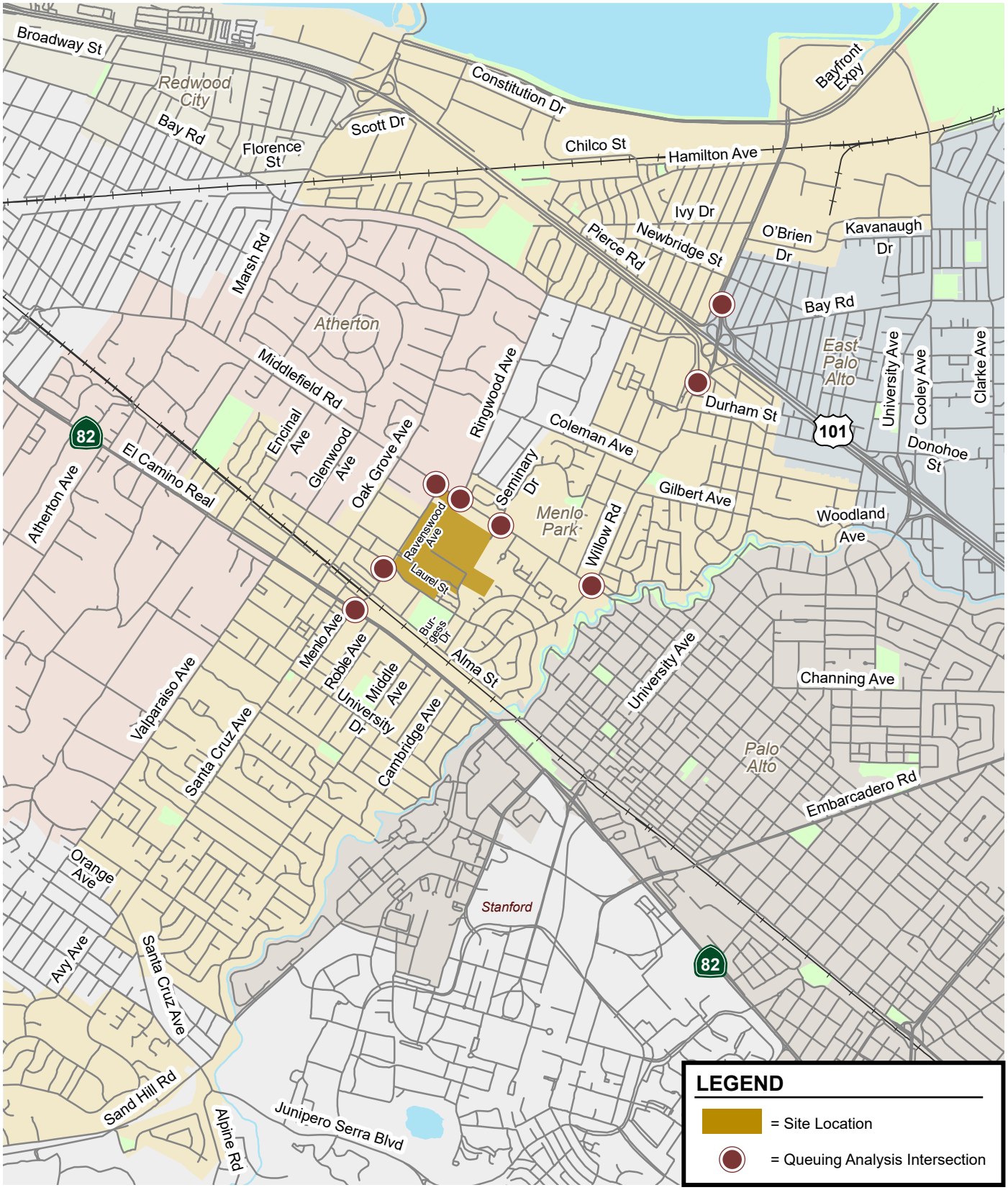


Figure 16
Queuing Analysis Locations

NORTH
Not to Scale

Vehicle queuing for the following intersections were analyzed based on the SimTraffic micro-simulation analysis and the vehicle queuing analysis results are summarized in the Micro-Simulation Queueing Analysis section below.

- Middlefield Road and Ravenswood Avenue (#15)
- Middlefield Road and Ringwood Avenue (#16)
- Middlefield Road and Seminary Drive (#17)
- Laurel Street and Ravenswood Avenue (#24)

Table 13
Intersection Vehicle Queuing Results

	US 101 NB Ramps/ Willow Rd		Bay Rd/ Willow Rd		Middlefield Rd/ Willow Rd		El Camino Real/ Ravenswood Ave			
	NBL		SBL		SBL		SBL		WBL	
Measurement	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Existing										
Volume (vph)	425	266	272	292	245	305	104	134	355	341
95th %. Queue (veh/ln)[1]	7	9	11	5	10	12	7	9	12	10
95th %. Queue (ft/ln)	175	225	275	125	250	300	175	225	300	250
Storage (ft/ln)	1265	1265	175	175	275	275	250	250	225	225
Adequate (Y/N)	Y	Y	**N**	Y	Y	**N**	Y	Y	**N**	**N**
Near-Term										
Volume (vph)	425	269	311	326	255	305	105	134	355	341
95th %. Queue (veh/ln)[1]	7	9	14	6	11	13	7	9	12	10
95th %. Queue (ft/ln)	175	225	350	150	275	325	175	225	300	250
Storage (ft/ln)	1265	1265	175	175	275	275	250	250	225	225
Adequate (Y/N)	Y	Y	**N**	Y	Y	**N**	Y	Y	**N**	**N**
Near-Term plus Project										
Volume (vph)	660	332	321	398	316	601	240	167	393	489
95th %. Queue (veh/ln)[1]	8	11	15	9	12	20	18	10	13	14
95th %. Queue (ft/ln)	200	275	375	225	300	500	450	250	325	350
Storage (ft/ln)	1265	1265	175	175	275	275	250	250	225	225
Adequate (Y/N)	Y	Y	**N**	**N**	**N**	**N**	**N**	Y	**N**	**N**

Notes:
NBL = northbound left-turn; SBL = southbound left-turn; WBL = westbound left-turn
[1] Vehicle queues are from Vistro outputs and are rounded up to the next whole number. Assumes one vehicle equals 25 feet of queue.

Locations where the estimated 95th percentile queues would exceed the available storage capacity for the movement are discussed below. Queuing issues are operational issues resulting from signal timing and queue storage provisions. Queuing issues are not considered a CEQA issue related to hazards.

Southbound Left-Turn at Bay Road and Willow Road (#9)

The existing vehicle storage for the southbound left-turn lane on Bay Road at Willow Road is 175 feet, which provides enough space for about 7 vehicles. Under existing conditions, the 95th percentile queue would exceed the storage of the left-turn lane by 4 vehicles in the AM peak hour. Under near-term

conditions, the 95th percentile queue would exceed the storage length of the turn lane by 7 vehicles during the AM peak hour. The Proposed Project would add one vehicle to the 95th percentile queue during the AM peak hour and cause the 95th percentile queue to exceed the storage length by 2 vehicles during the PM peak hour. The southbound approach on Bay Road is 24 feet wide for approximately 380 feet long north of Willow Road, which can be striped to provide 2 approach lanes with the inside lane being used by the left turn traffic. It should be noted that this improvement is not desired because it required tree removal and lane widening.

Southbound Left-Turn at Middlefield Road and Willow Road (#13)

The existing vehicle storage for the southbound left-turn lane on Middlefield Road at Willow Road is 275 feet, which provides enough space for about 11 vehicles. Under existing conditions, the 95th percentile queue would exceed the storage of the left-turn lane by one vehicle in the PM peak hour. Under near-term conditions, the 95th percentile queue would exceed the storage length of the turn lane by 2 vehicles during the PM peak hour. The Proposed Project would add 9 vehicles to the 95th percentile queue during the PM peak hour and cause the 95th percentile queue to exceed the storage length by one vehicle during the AM peak hour.

It is infeasible to add lanes to increase the capacity of the intersection. A potential improvement is to provide a roundabout. However, the improvement would require additional detailed analysis to determine its feasibility. Pedestrian and bicycle travel through a roundabout also need to be carefully designed.

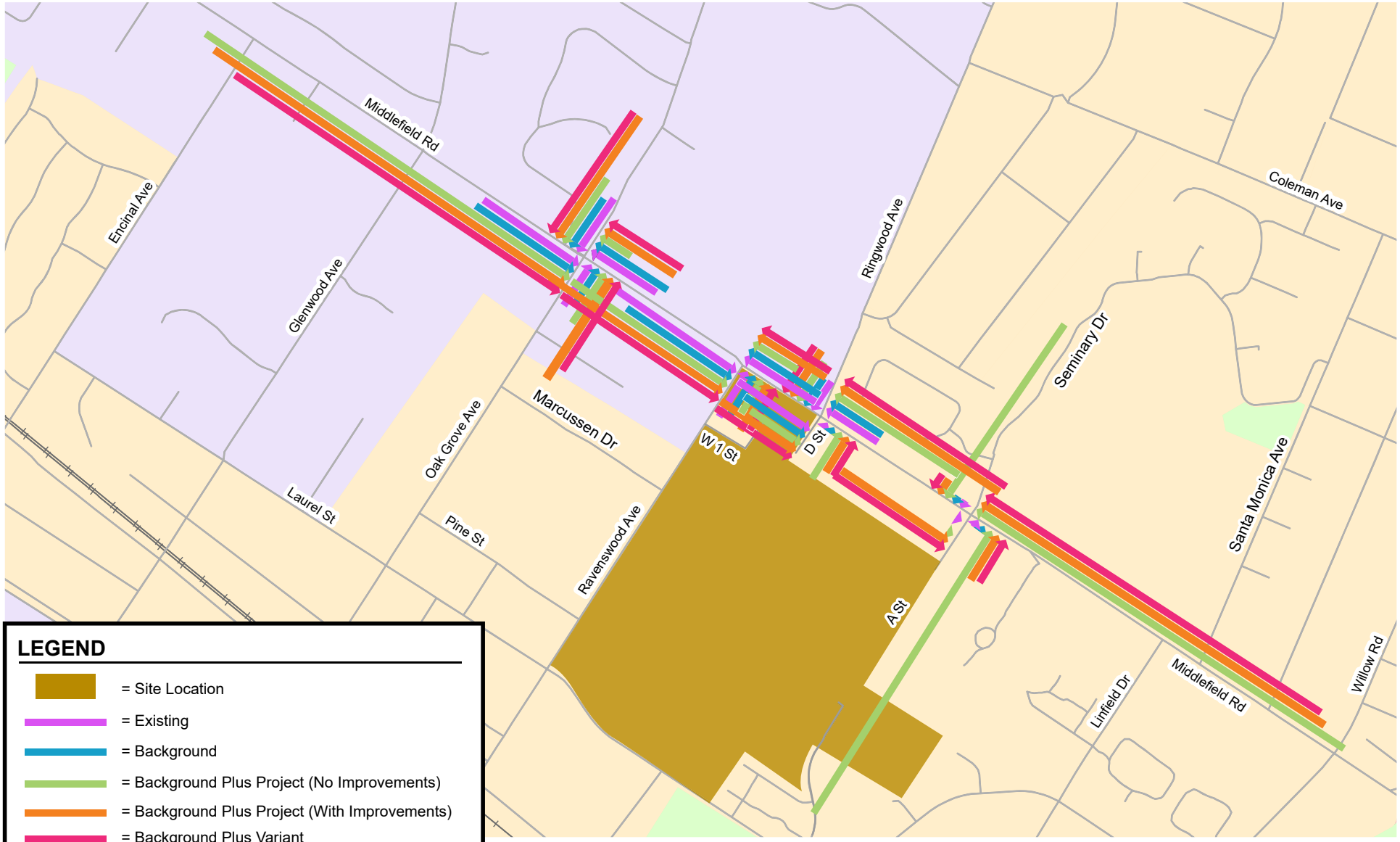
Southbound Left-Turn at El Camino Real and Ravenswood Avenue (#32)

The existing vehicle storage for the southbound left-turn lane on El Camino Real at Ravenswood Avenue is 250 feet, which provides enough space for about 10 vehicles. Under existing and near-term conditions, the 95th percentile queue would not exceed the storage of the left-turn lane in the AM and PM peak hours. The Proposed Project would cause the 95th percentile queue to exceed the storage length by 8 vehicles during the AM peak hour. There is no room to further extend this left-turn lane because of the short block between Ravenswood Avenue and Santa Cruz Avenue. It is also infeasible to add a turn lane to increase the storage capacity for the southbound left-turn lane.

Westbound Left-Turn at El Camino Real and Ravenswood Avenue (#32)

The existing vehicle storage for the westbound left-turn lanes on Ravenswood Avenue at El Camino Real is 225 feet per lane, which provides enough space for about 9 vehicles per lane. Under existing and near-term conditions, the 95th percentile queue would exceed the storage of the left-turn lane by 3 vehicles in the AM peak hour and one vehicle in the PM peak hour. The Proposed Project would cause the 95th percentile queue to exceed the storage length by 4 vehicles during the AM peak hour and 5 vehicles in the PM peak hour.

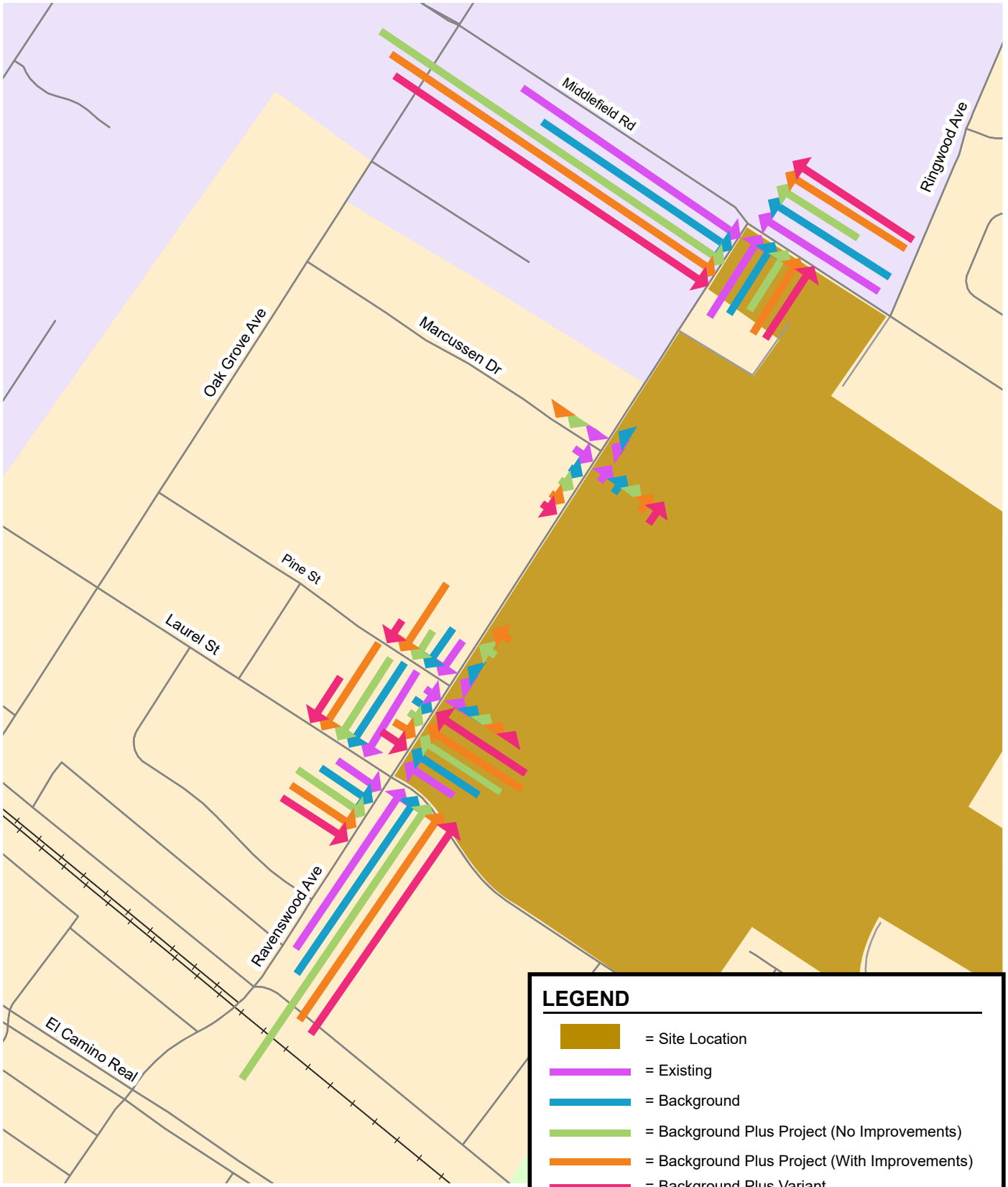
There is no room to further extend the left-turn lanes because this would require removing trees and the signage in the median. It is also infeasible to add a turn lane to increase the storage capacity for the left-turn movement.



Note: Queue lengths are approximate.

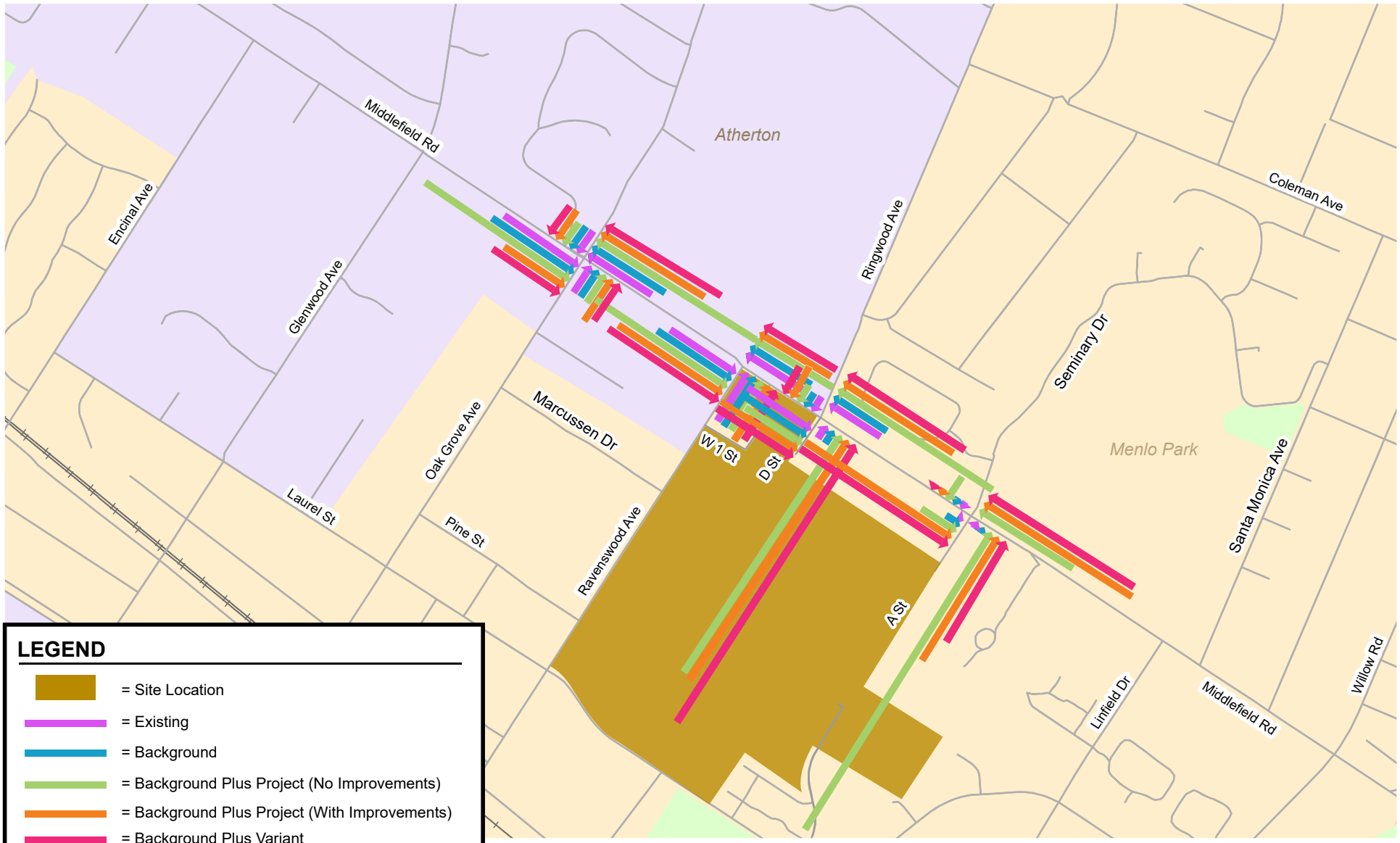
Figure 9
Middlefield Road Corridor AM Peak Hour – 95th Percentile Queues

NORTH
Not to Scale



Note: Queue lengths are approximate

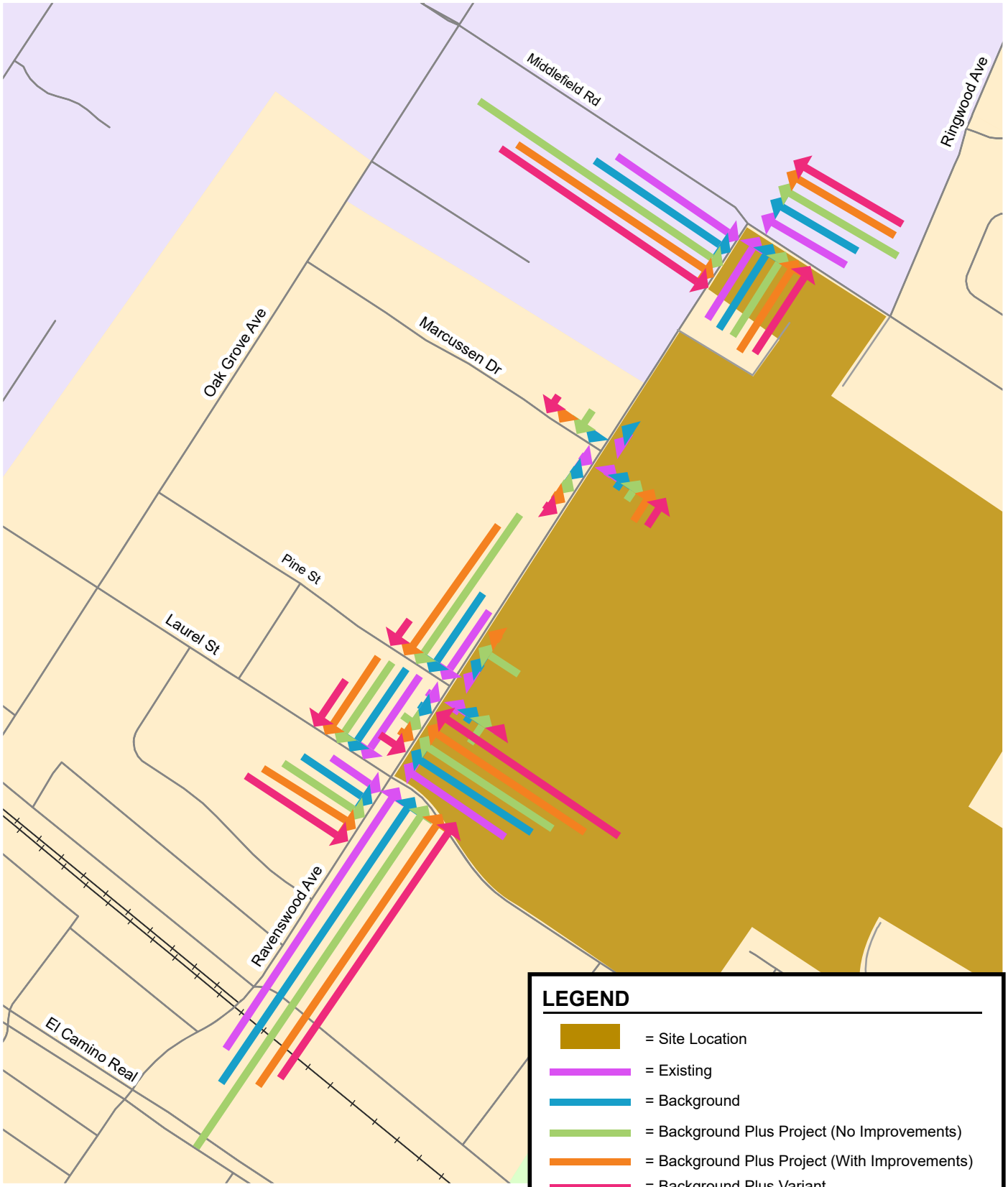
Figure 10
Ravenswood Avenue Corridor AM Peak Hour – 95th Percentile Queues



Note: Queue lengths are approximate.

Figure 13
Middlefield Road Corridor PM Peak Hour – 95th Percentile Queues

NORTH
Not to Scale



Note: Queue lengths are approximate.

Figure 14
Ravenswood Avenue Corridor PM Peak Hour – 95th Percentile Queues

Micro-Simulation Queueing Analysis

The SimTraffic micro-simulation analysis was conducted to evaluate traffic operations and vehicles queuing along the Middlefield Road and Ravenswood Avenue corridors between Oak Grove Avenue and Seminary Drive and between Middlefield Road and Laurel Street, respectively (see Appendix B). Due to the close proximity of the study intersections on Middlefield Road and Ravenswood Avenue, the micro-simulation analysis showed that the Proposed Project would contribute to significant traffic congestion along Middlefield Road. The following study intersections along the corridors would experience 95th percentile queues that extend beyond the existing left-turn storage capacity during at least one of the peak hours under near-term plus project conditions. The 95th percentile queues for through lanes along Middlefield Road and Ravenswood Avenue are also estimated to extend from one intersection to an upstream intersection.

- Middlefield Road and Ravenswood Avenue (#15)
- Middlefield Road and Ringwood Avenue (#16)
- Middlefield Road and Seminary Drive (#17)
- Laurel Street and Ravenswood Avenue (#24)

With the identified improvements described under Near-Term (2027) Plus Project Intersection Levels of Service, traffic operations would improve significantly along Middlefield Road near the Project Site with reduced vehicle queues. However, 95th percentile queues would still extend beyond the existing left-turn storage capacity. The 95th percentile queues for through lanes along Middlefield Road and Ravenswood Avenue would still extend from one intersection to an upstream intersection (see Figures 17 to 20, also see Appendix B).

Freeway Facilities Analysis

In analyzing the freeway segments, the citywide travel demand forecast model was used to forecast the increase in traffic volumes between existing and cumulative plus project conditions. For the purpose of this study, freeway levels of service under cumulative conditions are calculated based on volume to capacity (V/C) ratio. A freeway segment is assumed to operate at LOS F under future conditions if,

- The freeway segment already operates at LOS F under existing conditions, or
- The ConnectMenlo model forecasts the freeway segment to operate at a V/C ratio above 1 under future conditions.

Definition of Adverse Freeway Effects

Within San Mateo County, a project is said to create an adverse effect on traffic conditions on a freeway segment if for either peak hour:

1. The analysis indicates that the combination of the Project and future traffic demand will result in the freeway segment operating at a level of service that exceeds the standard adopted by the current CMP and the Proposed Project increases traffic demand on the freeway segment by an amount equal to one percent (1%) or more of the segment capacity, or
2. The Project will add traffic demand equal to one percent (1%) or more of the segment capacity if the freeway segment is currently not in compliance with the adopted LOS standard.

Freeway Analysis

As shown on Table 14, the Proposed Project would add traffic greater than 1% capacity to the following study freeway segments operating below its LOS standard:

- SR 84 – from Alameda County Line to University Avenue – AM Peak Hour
- US 101 – between Santa Clara County Line and Whipple Avenue – AM & PM Peak Hours

Freeway Improvements

It should be noted that the cumulative plus project conditions model run assumed the US 101 express lane project in San Mateo County. Improvements to eliminate the adverse freeway effects on US 101 and on SR 84 within San Mateo County would require additional capacity improvements and/or additional TDM measures that would reduce peak-hour vehicle trip-making by more than 60%. San Mateo County currently has no plans to further improve US 101 beyond the identified express lane projects. There are also no identified plans to improve the Bayfront Expressway (SR 84) corridor. Such an aggressive TDM plan would also not be feasible.

The Proposed Project's adverse effects on US 101 and on SR 84 freeway segments in San Mateo County would remain.

Freeway Ramp Analysis

A freeway ramp analysis is conducted under cumulative plus project conditions to determine whether freeway ramps would continue to have sufficient capacity to serve the forecasted traffic demand. For the purpose of this study, a project is said to create an adverse effect on a freeway ramp if:

- The project would cause the volume-to-capacity (V/C) ratio of the freeway ramp to exceed 1.0; or
- The project would increase the amount of traffic on a freeway ramp that is already exceeding its capacity by more than one percent (1%) of the ramp's capacity.

As shown on Table 15, under cumulative plus project conditions, all study freeway ramps would continue to have sufficient capacity to serve the anticipated demand.

Site Access, Circulation, and Parking

Site access and on-site circulation were evaluated using commonly accepted transportation principles. This review is based on the site plan prepared by STUDIOS Architecture dated June 28, 2023.

Vehicle Site Access and Circulation

The Proposed Project has a residential component and a commercial component. The two components are separated from a vehicle site access and circulation perspective. The residential component has a townhome portion, which has a dedicated driveway on Laurel Street. The apartment buildings consist of four separate buildings and are all connected via one driveway on Ravenswood Avenue opposite of Pine Street, and one driveway on Laurel Street. These two driveways both provide access to parking garages and parking lots for the apartment buildings.

The commercial component of the Proposed Project consists of multiple office buildings accessed by four driveways. Two of the driveways are on Ravenswood Avenue, while the other two driveways are at the east property boundary, and connect to D Street and Seminary Drive, respectively. All driveways provide access to a internal loop road on site, which connects to 3 parking garages and multiple parking lots. There would also be programmable park at the northeast corner of the Project Site, east of the existing church. There is a right-turn-in-only driveway just east of the church that would provide access to this park.

Table 14
Freeway Analysis

CMP Facility	Roadway Segment	Dir.	Pk Hr	LOS Standard	Capacity	Existing LOS	Yr 2040 + Project		
							LOS	Project Traffic	% Project Added
SR 84	University Ave to Alameda County Line	SB	AM	F	2,100	**F**	**F**	**14**	**0.2%**
		SB	PM	F	2,100	**F**	**F**	**59**	**0.9%**
SR 84	Alameda County Line to University Ave	NB	AM	F	2,100	**F**	**F**	**64**	**1.0%**
		NB	PM	F	2,100	**F**	**F**	**16**	**0.3%**
US 101	Santa Clara County Line to Whipple Ave	NB	AM	F	2,300	**F**	**F**	**281**	**2.7%**
		NB	PM	F	2,300	**F**	**F**	**127**	**1.2%**
US 101	Whipple Ave to Santa Clara County Line	SB	AM	F	2,300	**F**	**F**	**128**	**1.2%**
		SB	PM	F	2,300	**F**	**F**	**260**	**2.5%**
SR 114 (Willow Rd)	US 101 to SR 84	EB	AM	E	1,100	B	B	30	1.4%
		EB	PM	E	1,100	B	B	130	5.9%
SR 114 (Willow Rd)	SR 84 to US 101	WB	AM	E	1,100	C	C	140	6.4%
		WB	PM	E	1,100	C	C	35	1.6%
SR 82 (El Camino Real)	Glenwood Avenue to SR 84	NB	AM	E	1,100	B	B	19	0.9%
		NB	PM	E	1,100	A	C	65	3.0%
SR 82 (El Camino Real)	SR 84 to Glenwood Avenue	SB	AM	E	1,100	B	B	180	5.5%
		SB	PM	E	1,100	A	A	41	1.2%
SR 82 (El Camino Real)	Santa Cruz Avenue to Glenwood Avenue	NB	AM	E	1,100	B	B	20	0.9%
		NB	PM	E	1,100	C	C	65	3.0%
SR 82 (El Camino Real)	Glenwood Avenue to Santa Cruz Avenue	SB	AM	E	1,100	B	B	179	8.1%
		SB	PM	E	1,100	C	C	41	1.9%
SR 82 (El Camino Real)	Santa Clara County Line to Santa Cruz Avenu	NB	AM	E	1,100	D	D	204	6.2%
		NB	PM	E	1,100	D	D	51	1.5%
SR 82 (El Camino Real)	Santa Cruz Avenue to Santa Clara County Lin	SB	AM	E	1,100	D	D	40	1.2%
		SB	PM	E	1,100	D	D	177	5.4%

Notes:
Data referenced San Mateo Couny City/County Association of Governments *Congestion Management Program 2019.*
Bold indicates non-compliant LOS
box and BOLD indicates adverse effect

Table 15
Freeway Ramp Capacity Analysis

Interchange	Ramp	Peak Hour	Lanes Type	Mixed	HOV	Meter [1]	Capacity [2]	Existing Conditions Volume [3]	Existing Conditions V/C	Year 2040 + Project Conditions Volume	Year 2040 + Project Conditions V/C
US 101/Marsh Road	SB off-ramp to Marsh Road	AM	Diagonal	2	-	-	3,800	1,402	0.37	1,679	0.44
		PM					3,800	1,932	0.51	2,193	0.58
	SB on-ramp from EB Marsh Rd	AM	Diagonal	1	1	-	2,000	650	0.33	852	0.43
		PM				YES	1,800	830	0.46	830	0.46
	NB off-ramp to Marsh Road	AM	Diagonal	1	-	-	2,000	1,127	0.56	1,498	0.75
		PM					2,000	782	0.39	909	0.45
	NB on-ramp from EB Marsh Rd	AM	Loop	1	-	YES	900	381	0.42	381	0.42
		PM				-	1,900	388	0.20	400	0.21
US 101/Willow Road	NB off-ramp to Willow Road	AM	Diagonal	2	-	-	3,800	1,031	0.27	1,031	0.27
		PM					3,800	1,115	0.29	1,115	0.29
	NB on-ramp from EB Willow Road	AM	Loop	1	1	YES	1,800	258	0.14	494	0.27
		PM				-	1,900	608	0.32	718	0.38
	SB on-ramp from EB Willow Road	AM	Diagonal	1	1	-	2,000	646	0.32	655	0.33
		PM				YES	1,800	364	0.20	533	0.30
	SB off-ramp to Willow Road	AM	Diagonal	2	-	-	3,800	509	0.13	1,239	0.33
		PM					3,800	867	0.23	1,124	0.30

Notes:
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound
1. Northbound on-ramps are assumed metered during the AM peak hour. Southbound on-ramps are assumed metered during the PM peak hour.
2. Ramp capacities were obtained from *Highway Capacity Manual 2000*, and considered the free-flow speed, the number of lanes on the ramp, and ramp metering.
3. Existing volumes referenced intersection counts collected in 2022/2023.

Sight Distance

The proposed driveway locations were evaluated to determine if the sight distance at the new driveways would be adequate. The Proposed Project driveways should be free and clear of any obstructions to optimize sight distance, thereby ensuring that exiting vehicles can see pedestrians on the sidewalk and other vehicles traveling on the street. Adequate sight distance reduces the likelihood of a collision at driveways and provides drivers with the ability to locate sufficient gaps in traffic to exit the driveway. Sight distance of a driveway is evaluated based on the stopping sight distance recommended by Caltrans for a given design speed.

The speed limit along Laurel Street near the Project Site is 25 miles per hour (mph). The speed limit along Ravenswood Avenue near the Project Site is 30 mph. The Caltrans recommended stopping sight distance is 150 feet on Laurel Street, and 200 feet on Ravenswood Avenue. There are no on-street parking or considerable roadway curves that would block a driver's ability at any of the Proposed Project driveways along Laurel Street or Ravenswood Avenue to see up to the recommended stopping sight distances. The Proposed Project should ensure any landscaping and signage will be located in such a way as to ensure an unobstructed view for drivers entering and exiting the site.

The Proposed Project also has one driveway that would extend into D Street. Since the driveway would become a continuation of D Street, there would be no sight distance issues at that location.

The Proposed Project also has one driveway that would intersect Seminary Drive. This intersection has three other driveways from other non-project parcels all connected to it. It should be noted that the Project Sponsor is working with City staff to improve the geometric design and simplify intersection operations at this location. It is expected that the improvement would provide adequate sight distance for drivers traveling through the intersection.

On-Site Circulation

The site plan does not provide specific dimensions for driveway widths, parking aisles, parking space dimensions, etc. The site plan does not specify loading and trash locations. Prior to final design, the Project Sponsor shall coordinate with City staff to ensure the site is designed per City standards.

Pedestrian and Bicycle Facilities

The Proposed Project proposes multiple pedestrian and bicycle connections between the Project Site and the surrounding roadway network and within the Project Site:

- Class I multi-use path along the Project Site frontage on Ravenswood Avenue
- Class I multi-use path connecting Laurel Street and the Loop Road north of the proposed townhomes
- Class I multi-use path along the southern project boundary, running along Burgess Drive west to Laurel, and east to Seminary Drive
- Class II bicycle lanes along all roadways inside the Project Site
- Class IV bicycle facility along Laurel Street from Burgess Drive to Ravenswood Avenue

The details of these proposed designs have not been finalized yet. Prior to final design, the Project Sponsor shall coordinate with City staff to ensure the proposed pedestrian and bicycle facilities are designed to appropriate standards. The proposed multimodal improvements would represent an overall improvement to the walking and biking facilities in the immediate vicinity of the Project Site.

Parking

Several potential strategies for structuring the entitlements are being considered. The specific entitlement strategies and regulations for the applicable zoning district will be further developed in coordination with the city. Thus, no applicable parking requirements for the Proposed Project have been established. The Project Site is located proximate to the Menlo Park Caltrain station and proposes various Transportation Demand Management (TDM) measures to reduce vehicle trip making and lower parking demands. Table 16 shows that the Proposed Project proposes to provide 519 parking spaces for the residential component, and 2,800 parking spaces for the office/R&D component.

Public parking for the recreational field and community building would be provided on evenings and weekends in the northeast parking lot. This parking area would meet certain ongoing private parking obligations, as reflected in an easement from the church property at 201 Ravenswood Avenue. Shared parking is also anticipated to be available for residential visitors on evenings and weekends in office/R&D area surface lots and structures.

Table 16
Proposed Parking Spaces

Building	Parking Ratio	Parking Spaces
Residential		
Multi-family Dwelling Units	1 space per unit	431
Townhouses	2 spaces per unit	38
100 Percent Affordable BMR Dwelling Units	0.5 space per unit	50
Total Parking Spaces		*519*
Office/R&D		
Surface Parking	2 space /1,000 sf	500
Parking Garage 1		690
Parking Garage 2		710
Parking Garage 3		640
Building 1 (Below grade)		120
Building 5 (Below grade)		120
Total Parking Spaces		*2,800*
Total Proposed Parking Spaces		***3,319 spaces***

4. Variant Analysis

This chapter describes and analyzes the transportation impacts for the Project Variant to the Proposed Project. The Project Variant is a variation of the Proposed Project at the same Project Site (although the Project Site would be slightly expanded to include 201 Ravenswood Avenue), generally with the same objectives, background, and development controls but with the following differences:

1. The Project Site has been expanded to include the parcel at 201 Ravenswood Avenue to create a continuous Project frontage area along Ravenswood Avenue and increase the size of the overall Project Site by approximately 43,762 square feet (sf) (approximately 1.0 acre), for a total of approximately 64.2 acres;
2. The Project Variant would include up to 250 additional residential rental dwelling units compared to the Proposed Project (an increase from 550 to 800 units, inclusive of up to 154 units to be developed by an affordable housing developer);
3. The Project Variant would reduce the underground parking footprint within the site, both by removing underground parking from the multifamily residential buildings in the residential area and removing the underground parking connection between office/research-and-development (R&D) Building O1 and Building O5. As a result, Parking Garage (PG) 1 and PG2 increase in square footage and height compared to the Proposed Project and the number of structured spaces increases by 400 (with no change in the total number of parking spaces proposed for the office/R&D buildings); and
4. The Project Variant would include an approximately 2- to 3-million-gallon emergency water reservoir that would be buried below grade in the northeast area of the Project Site, in addition to a small pump station, an emergency well, and related improvements that would be built at and below grade (i.e., emergency generator, disinfection system, surge tank) (referred to as "reservoir" throughout this document). It would be built and operated by the city of Menlo Park.

The Project Variant would not differ from many of the basic characteristics of the Proposed Project particularly with respect to the commercial component. For example, total office/R&D development would remain the same as under the Proposed Project. Certain residential uses, including the affordable housing site and a limited number of townhome units, would shift to the corner of the site nearest to the intersection of Middlefield Avenue and Ravenswood Avenue. In addition, the existing buildings associated with First Church of Christ, Scientist and Alpha Kids Academy (Chapel buildings) located at 201 Ravenswood would be demolished.

The Project Variant would include approximately 800 dwelling units, 250 more than the Proposed Project, through increased height and expansion of the Project Site. The additional dwelling units would be located along the western and northeastern portions of the Project Site. In the western portion of the site, Residential Buildings 1 (R1), R2, and R3 would be replaced with two multifamily buildings (Buildings R1 and R2), which would accommodate 300 units each, for a total of 600 multifamily rental

units; the 19 townhomes along Laurel Avenue included in the Proposed Project would be maintained (referred to as TH1).

In the northeastern portion of the Project Site, a multifamily six-story, 100 percent affordable building with up to 154 units (Building R3), to be separately developed by an affordable housing developer, would be located at the corner of Ravenswood Avenue and Middlefield Road; in addition, 27 attached townhomes would be located immediately south of Building R3 (referred to as TH2). In total, the number of BMR units would increase from 68 to 97 by applying the city's 15 percent inclusionary requirement to the 646 units within the mixed-income component of the Project Variant. The number of units to be included within the separate 100 percent affordable building would increase from 100 to 154. In total, there would be 251 BMR units and 549 market-rate residential units under the Project Variant. The Project Variant would increase the average square footage of residential area per unit because the Project Variant would include more three- and four-bedroom units than the Proposed Project.

The Project Variant would reduce the underground parking footprint within the site, both by removing underground parking from the residential buildings and removing the underground parking connection between Buildings Office/R&D 1 and Office/R&D 2. As a result, the commercial parking garages PG1 and PG2 increase in square footage and one-level of height (from 4- to 5-stories) as compared to the Proposed Project.

Under the Proposed Variant, the total number of commercial parking spaces remains unchanged at 2,800 spaces, whereas the residential parking increases to 919 spaces. The increased residential parking results from providing parking within Buildings R1 and R2 at 1.25 spaces per unit and providing for additional townhome parking of 2 spaces per unit for TH1 and TH2 (Project Variant includes 54 townhomes, compared to 19 townhomes under the Proposed Project). Parking for the 100% affordable building (Building R3) will remain at 0.5 spaces per unit, with the option to utilize parking spaces within PG1 and PG2 during nights and weekends. Parking for the R1, R2 and R3 multifamily buildings is provided within each of those buildings; parking for the up to 46 townhomes is provided within each unit.

Under the Project Variant, similar site access and vehicular, bicycle, and pedestrian circulation would occur as under the Proposed Project, with the following differences. R1 ingress and egress is located on Ravenswood Avenue and via the internal road that connects to the Loop Road, but there will be no access from Laurel Avenue. R2 ingress is located on Laurel Ave and via the internal road that connects to the Loop Road and the driveways on Ravenswood Avenue and Middlefield Road. R2 egress is provided only via the internal road to the driveways on Ravenswood Avenue and Middlefield Road. There will be no R2 egress to Laurel Avenue. As a consequence, residential trips associated with R1 and R2 would largely be shifted to the driveways on Ravenswood Avenue and Middlefield Road, and fewer trips would be using Laurel Avenue. The TH1 townhomes are accessible only from Laurel Ave. R3 (Affordable) and the TH2 townhomes (TH2) are accessible from Ravenswood Avenue and Middlefield Road.

This assessment considers the environmental impacts associated with the Project Variant. For some environmental topics, the impacts under the Project Variant would be the same as those of the Proposed Project. For these topics, further analysis is not needed, as explained in this chapter. However, for the intersection levels of service, the adverse effects of the Project Variant could differ from the adverse effects identified for the Proposed Project in Chapter 3. The differences between the Proposed Project and the Project Variant are analyzed quantitatively in this chapter. Unless otherwise stated, all recommended improvements described in Chapter 3 that would be required to reduce adverse effects associated with the Proposed Project would also be applicable to the Project Variant.

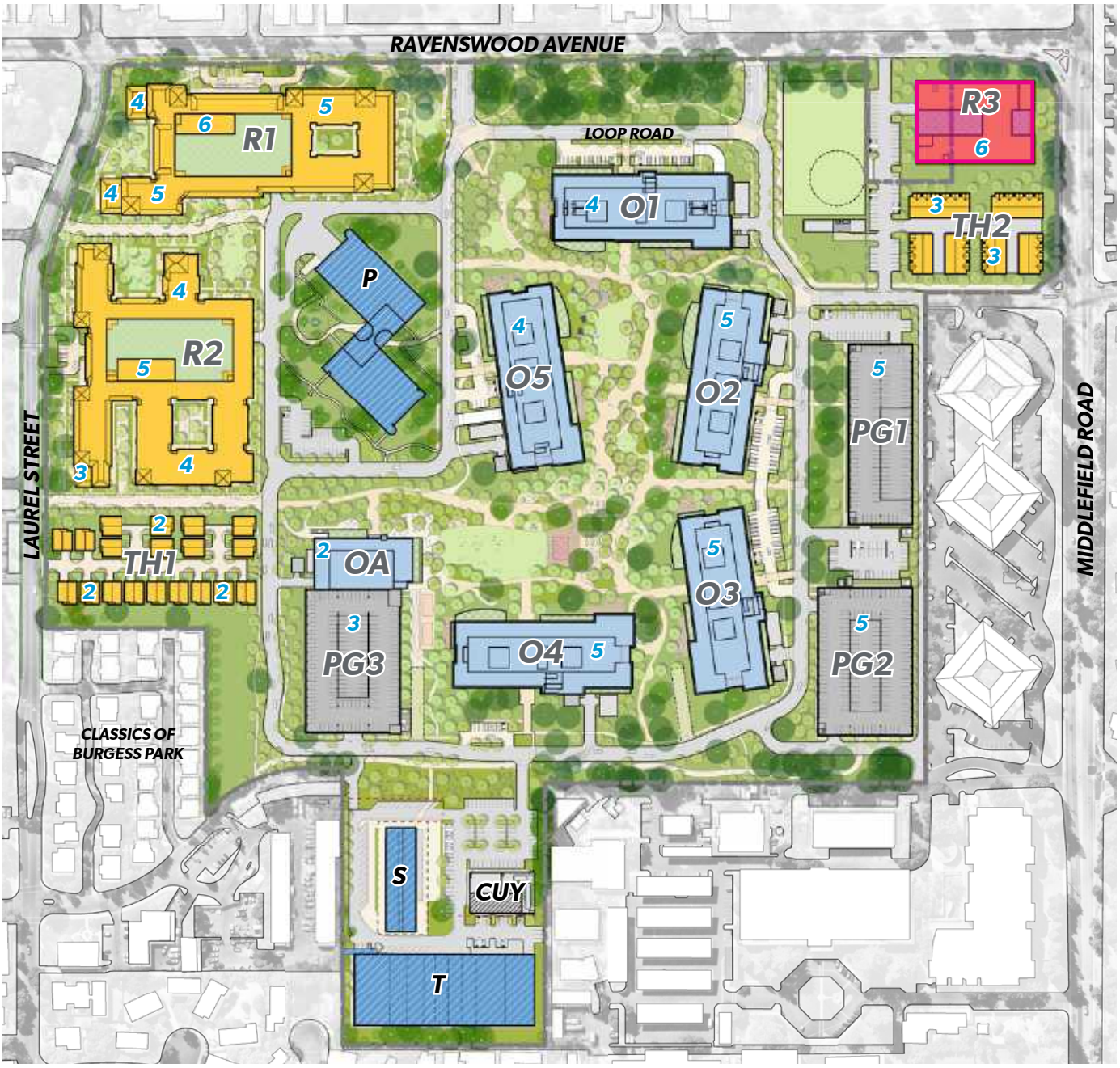


Figure 21
Project Variant Site Plan

CEQA Transportation Analysis

CEQA VMT Analysis

It is assumed that the Project Variant will implement a TDM Plan that achieves the same trip reduction as the Proposed Project. A VMT analysis for the Project Variant similar to the Proposed Project (see Chapter 2 above) is conducted. As shown in Table 17 below, the Project Variant with an additional 250 units would continue to generate VMT at levels below the City's respective VMT thresholds for residential and office/R&D uses.

Table 17
Project Variant VMT Analysis

Land Use	Regional Average	VMT Threshold	Project Variant VMT	VMT Impact
Office/R&D [1]	15.9	13.6	13.5	No
Residential [2]	13.1	11.2	9.6	No

Notes:
** All data referenced the latest Menlo Park citywide travel demand forecast model.*
1. VMT for office/R&D land use is reported in VMT per employee.
2. VMT for residential land use is reported in VMT per capita.
3. Project VMT accounted for implementation of a TDM Plan with 28% trip reduction target for the office/R&D land use, and 25% trip reduction target for the residential land use.

Impacts on Pedestrian, Bicycle and Transit Facilities

Under the Project Variant, similar site access and vehicular, bicycle, and pedestrian circulation would occur as under the Proposed Project, with some differences. R1 ingress and egress would be located on Ravenswood Avenue and via the internal road that connects to the Loop Road, but there would be no access from Laurel Avenue. R2 ingress is located on Laurel Avenue and via the internal road that connects to the Loop Road and the driveways on Ravenswood Avenue and Middlefield Road. R2 egress would be provided only via the internal road to the driveways on Ravenswood Avenue and Middlefield Road. No R2 egress to Laurel Avenue would be provided. The TH1 townhomes would be accessible only from Laurel Avenue. R3 (Affordable) and TH2 townhomes would be accessible from Ravenswood Avenue and Middlefield Road.

The proposed pedestrian, bicycle and transit facilities would remain the same as the Proposed Project notwithstanding the Project Variant's increase in housing units. Similar to the Proposed Project, the multimodal improvements proposed by the Project Variant would represent an improvement over existing conditions. Therefore, the Project Variant would continue to be consistent with all applicable pedestrian, bicycle and transit related plans, ordinances and policies.

Non-CEQA Level of Service Transportation Analysis

Project Variant Trip Estimates

The additional 250 units assumed under the Project Variant is expected to have minimal effect on internalization rates. As a conservative approach, it is assumed that the Proposed Project's trip generation rates and trip reduction percentages can be applied to the Project Variant. Furthermore, it is assumed that the Proposed Project TDM measures will continue to achieve the same effectiveness in terms of trip reduction percentages. As shown in Table 18 below, the Project Variant would generate a

total of 10,722 new daily trips, 1,395 new trips during the AM peak hour, and 1,350 new trips during the PM peak hour. Compared to the Proposed Project, this variant would increase trips generated by the project by 873 daily trips, including 73 AM peak-hour trips and 77 PM peak-hour trips.

The trip distribution pattern and trip assignment for the Project Variant are the same as those described in Chapter 3 for the Proposed Project. The Project Variant's net trip assignment is shown on Figure 22. The project trips were added to the near-term and cumulative traffic volumes to derive traffic volumes for near-term plus project variant conditions (see Figure 23) and cumulative plus project variant conditions (see Figure 24).

Intersection Levels of Service

The results of the intersection level of service analysis show that comparing to the Proposed Project, the additional 250 units would cause a higher increase in average critical delay at the study intersections as compared to the Proposed Project (see Tables 19 and 20). However, the additional increase in average critical delay would not create additional deficiencies. The intersection level of service calculation sheets are included in Appendix G.

Trips added by the additional 250 units are expected to travel in different directions once they exit the Project Site. Their effect on intersection levels of service at non site-accessing intersections is expected to be minimal. Level of service conclusions for the other study intersections are expected to remain the same as the Proposed Project.

Table 18
Project Variant Trip Generation Estimates

Land Use		Size		Daily Rate	Daily Trips	AM Peak Hour Rate	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour Rate	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Proposed Use	**ITE Code [1]**												
General Office	710	1,094	ksf	10.84	11,855	1.52	1,462	200	1,662	1.44	268	1,307	1,575
Multifamily Housing (Mid-Rise)	221	600	du	4.54	2,724	0.37	51	171	222	0.39	143	91	234
Single-Family Attached Housing	215	46	du	7.20	331	0.48	6	16	22	0.57	15	11	26
Affordable Housing	223	154	du	4.81	741	0.50	22	55	77	0.46	42	29	71
Soccer Complex[3]	488	1	field	71.33	71	0.99	1	0	1	16.43	11	5	16
Gross Project Trips (before any reductions)					**15,722**		**1,542**	**442**	**1,984**		**479**	**1,443**	**1,922**
Gross Project Trips After Internal Capture Reduction					**14,987**		**1,495**	**427**	**1,922**		**459**	**1,398**	**1,857**
Project Trips After TDM Reduction (25%) [5]					**11,240**		**1,121**	**320**	**1,441**		**344**	**1,049**	**1,393**
Other Trip Adjustments													
Existing Uses (non P, S, T Buildings) [4]					(518)		(38)	(8)	(46)		(11)	(32)	(43)
Net Project Trips on Project Network					**10,722**		**1,083**	**312**	**1,395**		**333**	**1,017**	**1,350**

Notes:

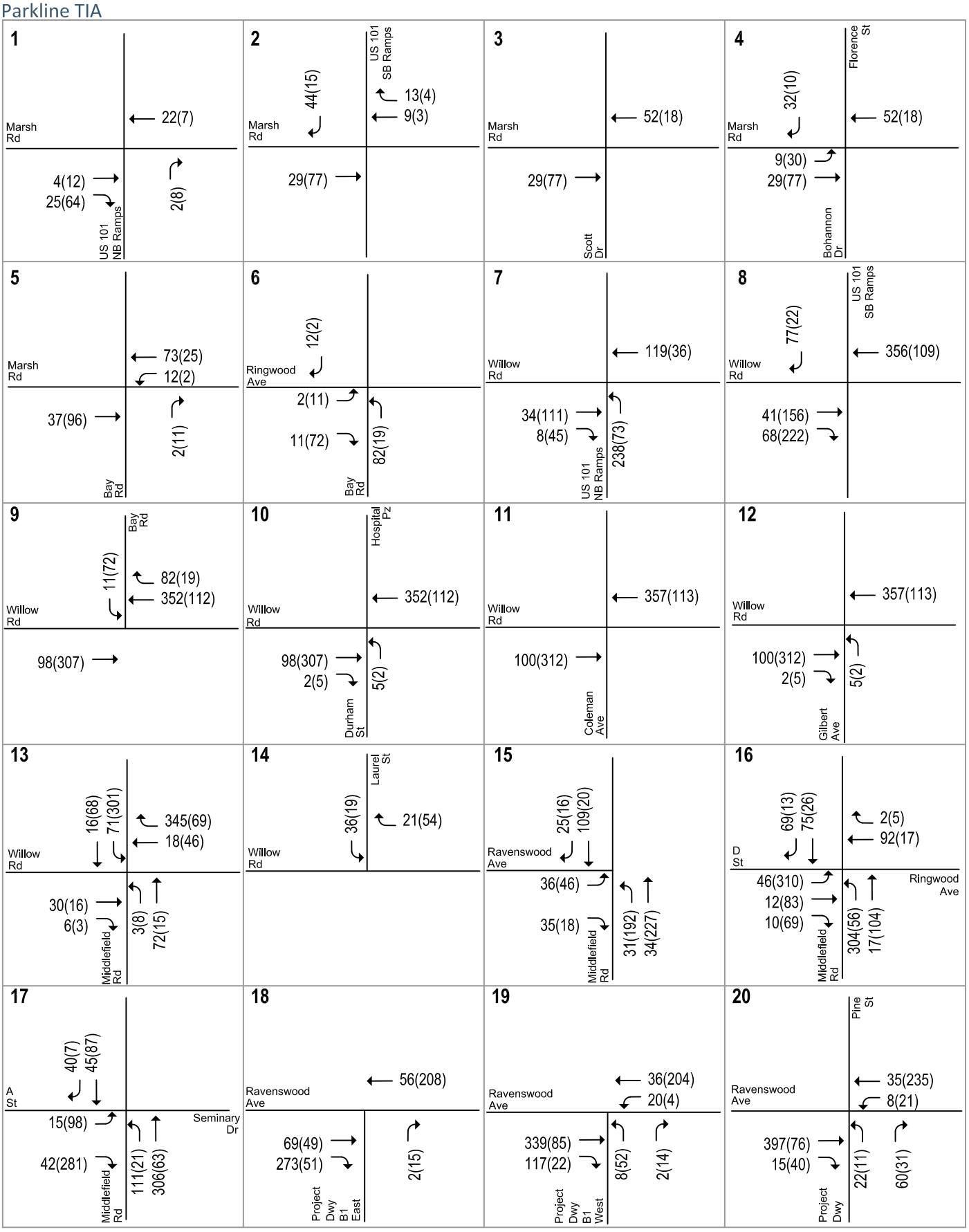
ksf = 1,000 square feet; du = dwelling unit

[1] Daily, AM, and PM peak hour average rates published in *ITE Trip Generation Manual, 11th Edition, 2021* were used for each land use.

[2] Internal Capture developed using *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and *US EPA Mixed Use Trip Generation Model v.4, 2010* per the methodology described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo*, American Planning Association, 2020.

[3] *ITE Trip Generation Manual, 11th Edition, 2021* provides trip rates per field for a soccer complex. The Proposed Project would include active recreational areas in the Ravenswood Avenue Parklet. It is assumed that the park would have play structures and open field areas for warm-ups or casual play. The number of soccer fields on the park was estimated based on the size of a standard soccer field.

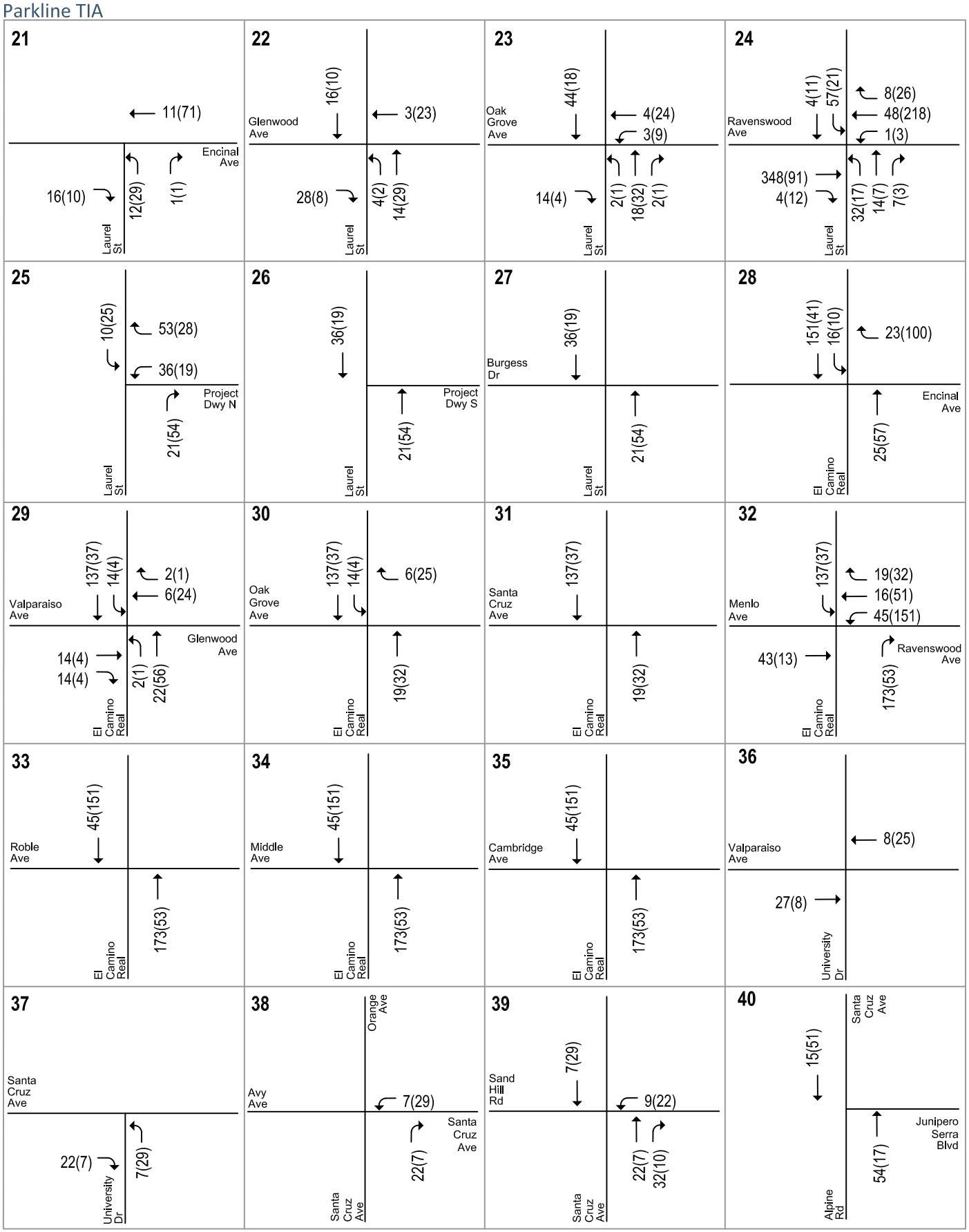
[4] Existing use Trip Estimates based on driveway counts conducted by Fehr & Peers in 2021. Of the 1,100 employees on-site, Buildings P, S, T had 700 employees. The trip generation for these buildings is proportioned based on employees.



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

Figure 22
Project Variant Trip Assignment



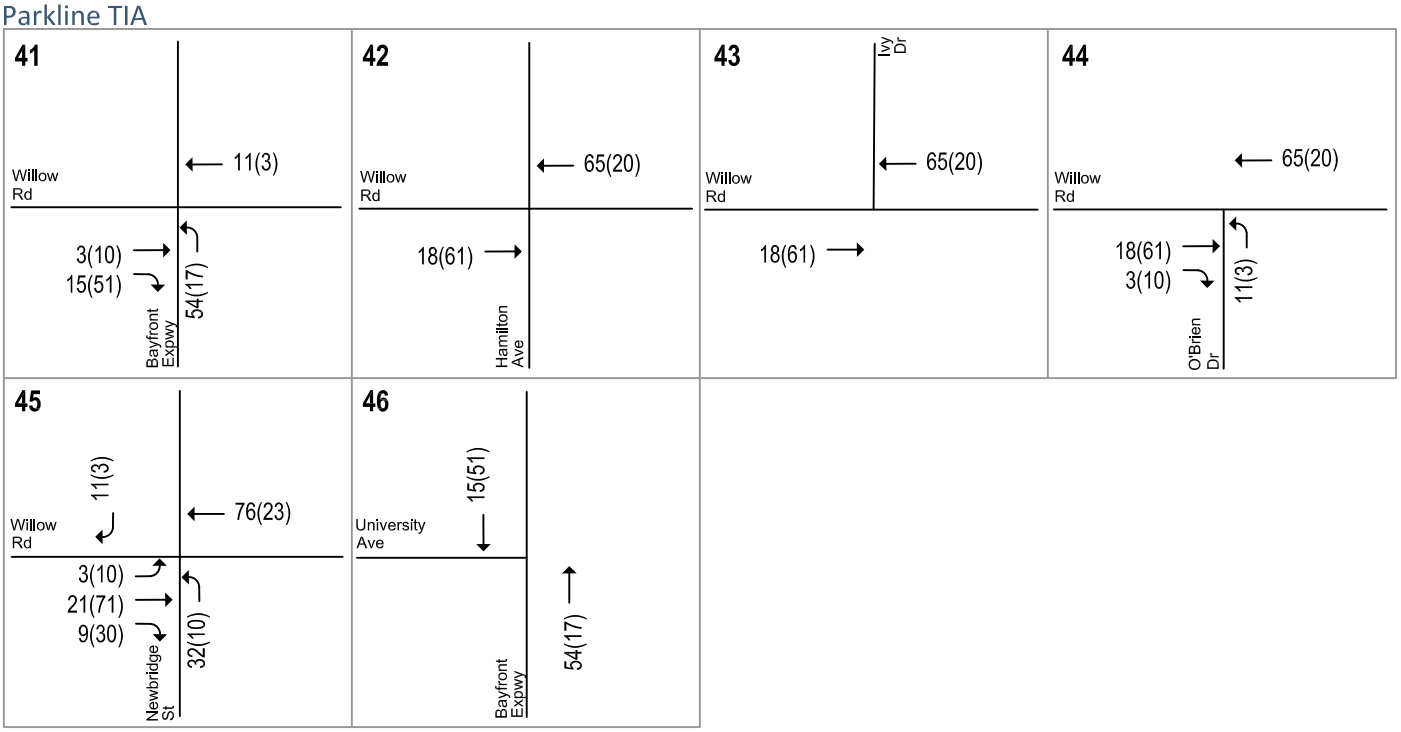
LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

Figure 22
Project Variant Trip Assignment

HEXAGON

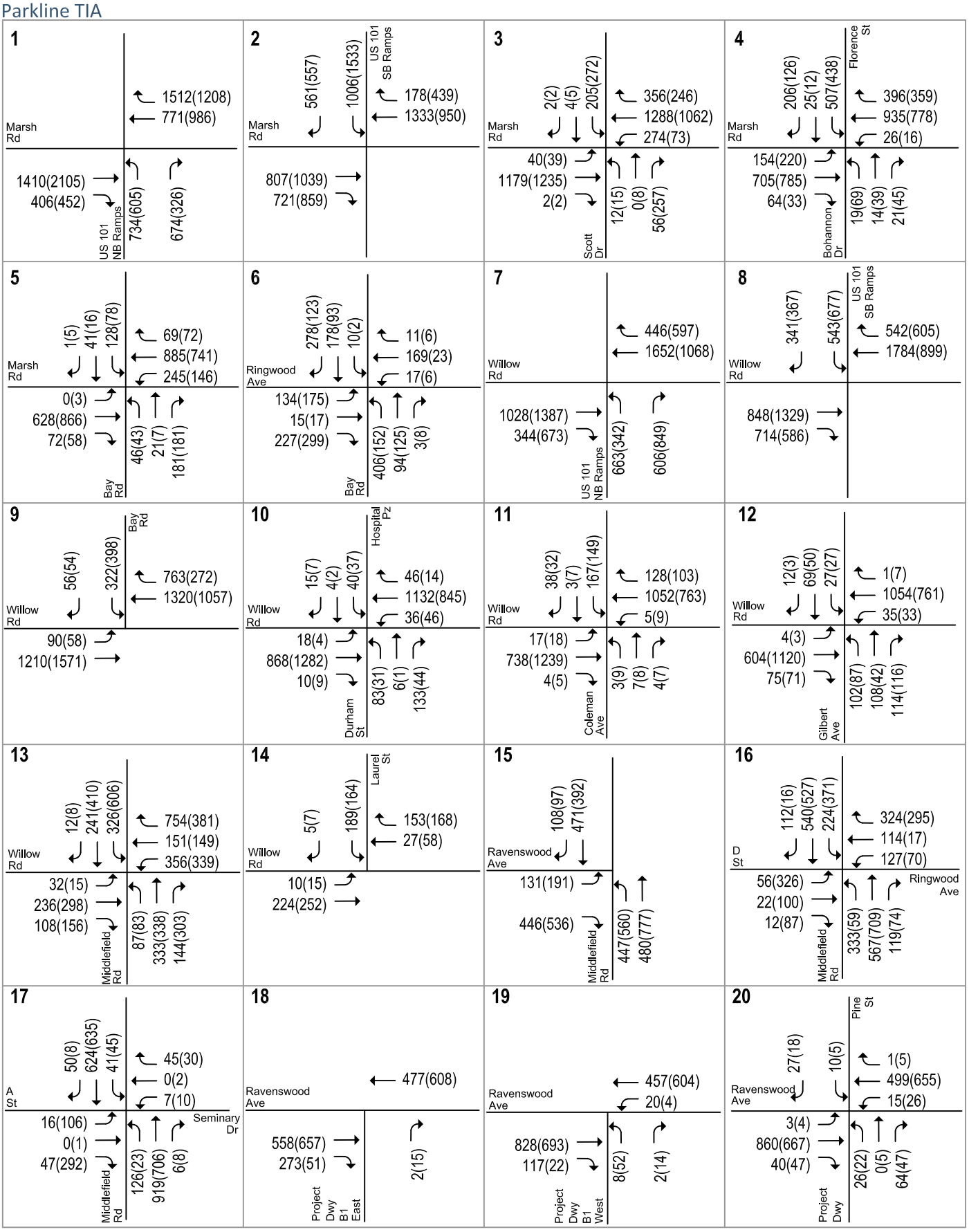
NORTH
Not to Scale



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

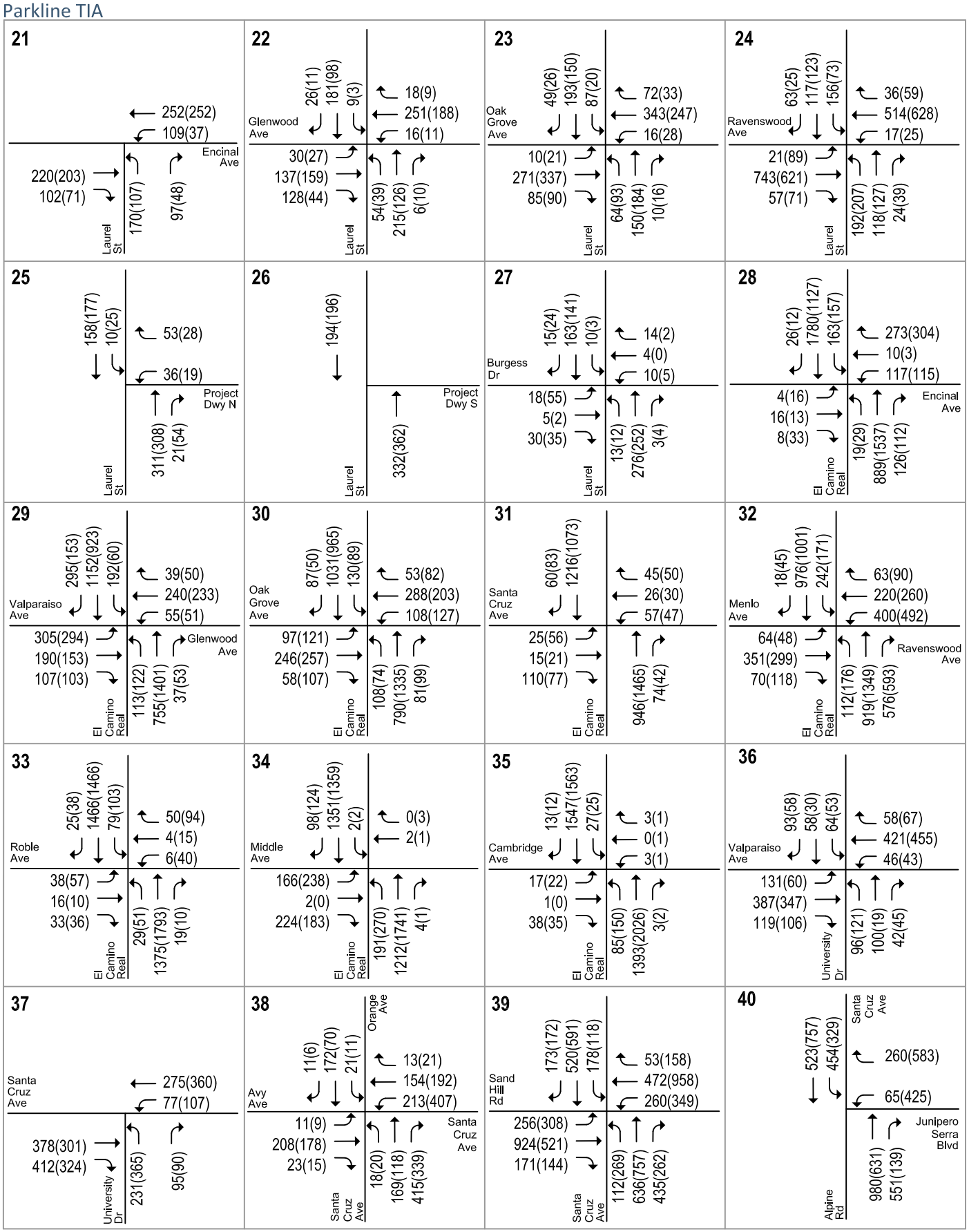
Figure 22
Project Variant Trip Assignment



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

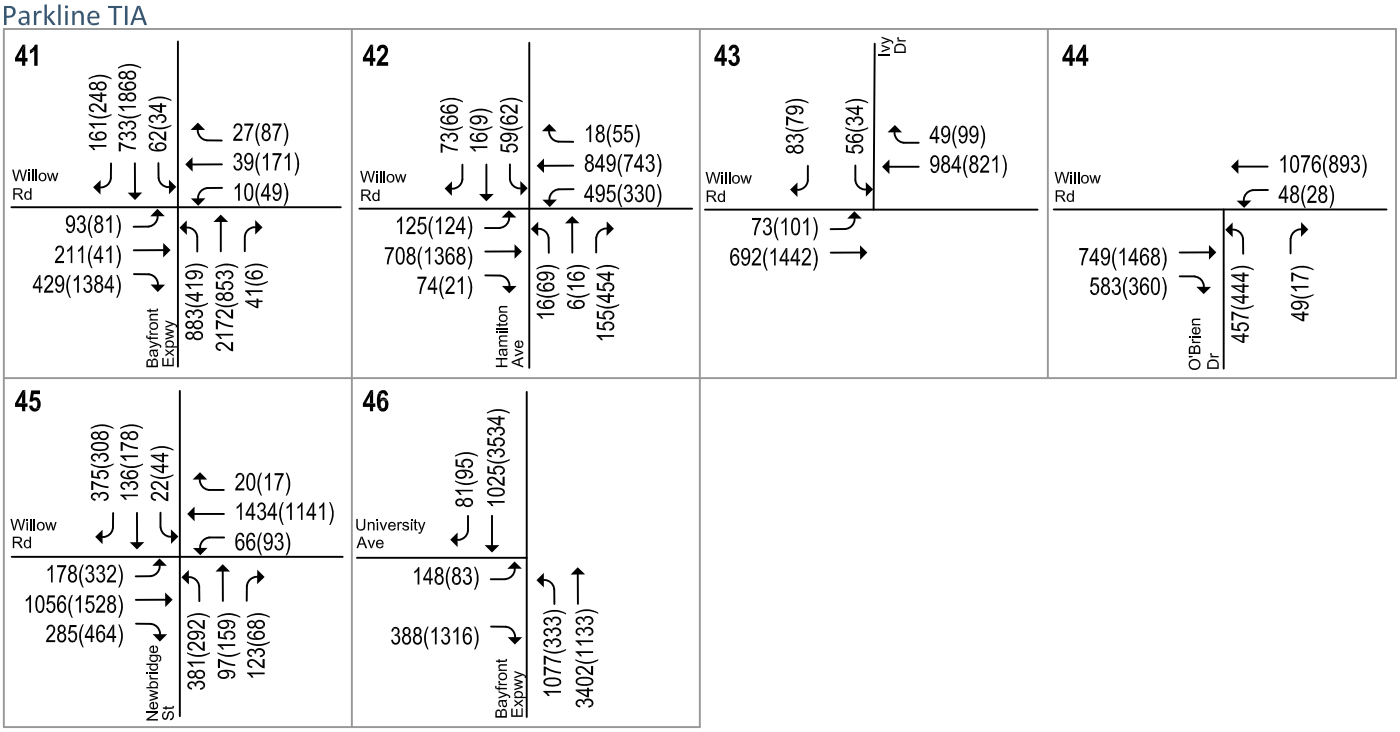
Figure 23
Near-Term Plus Project Variant Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

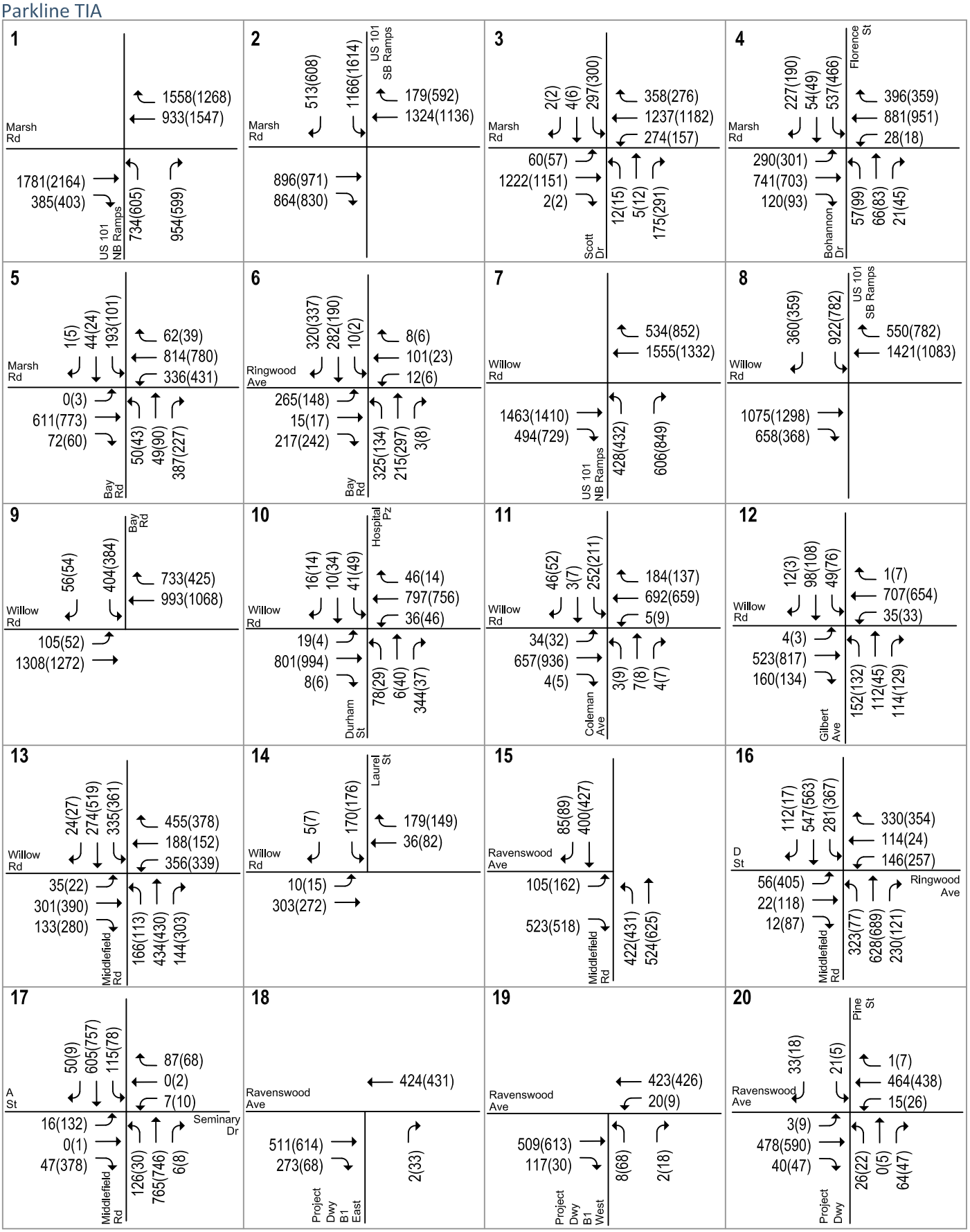
Figure 23
Near-Term Plus Project Variant Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

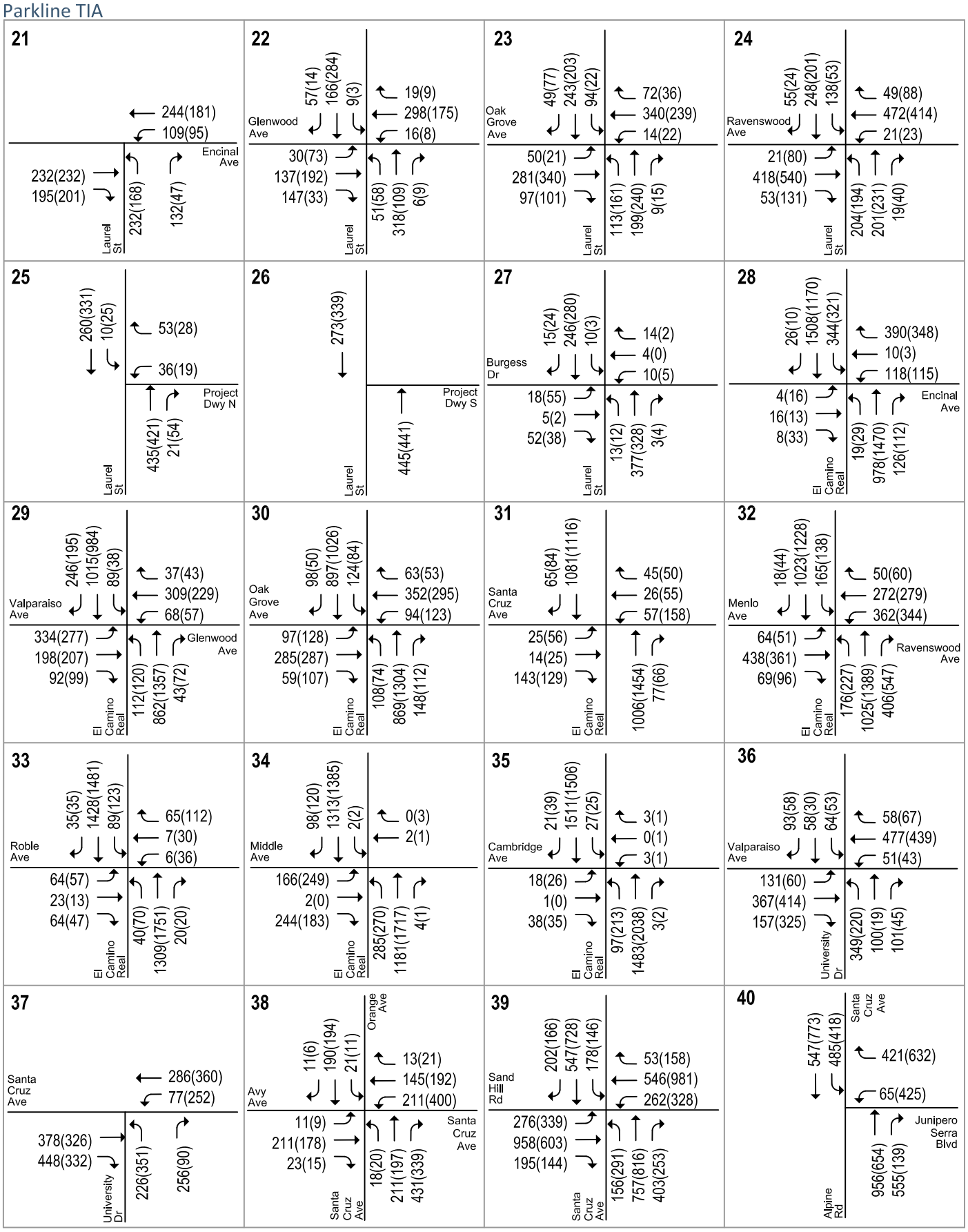
Figure 23
Near-Term Plus Project Variant Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 24
Cumulative Plus Project Variant Traffic Volumes

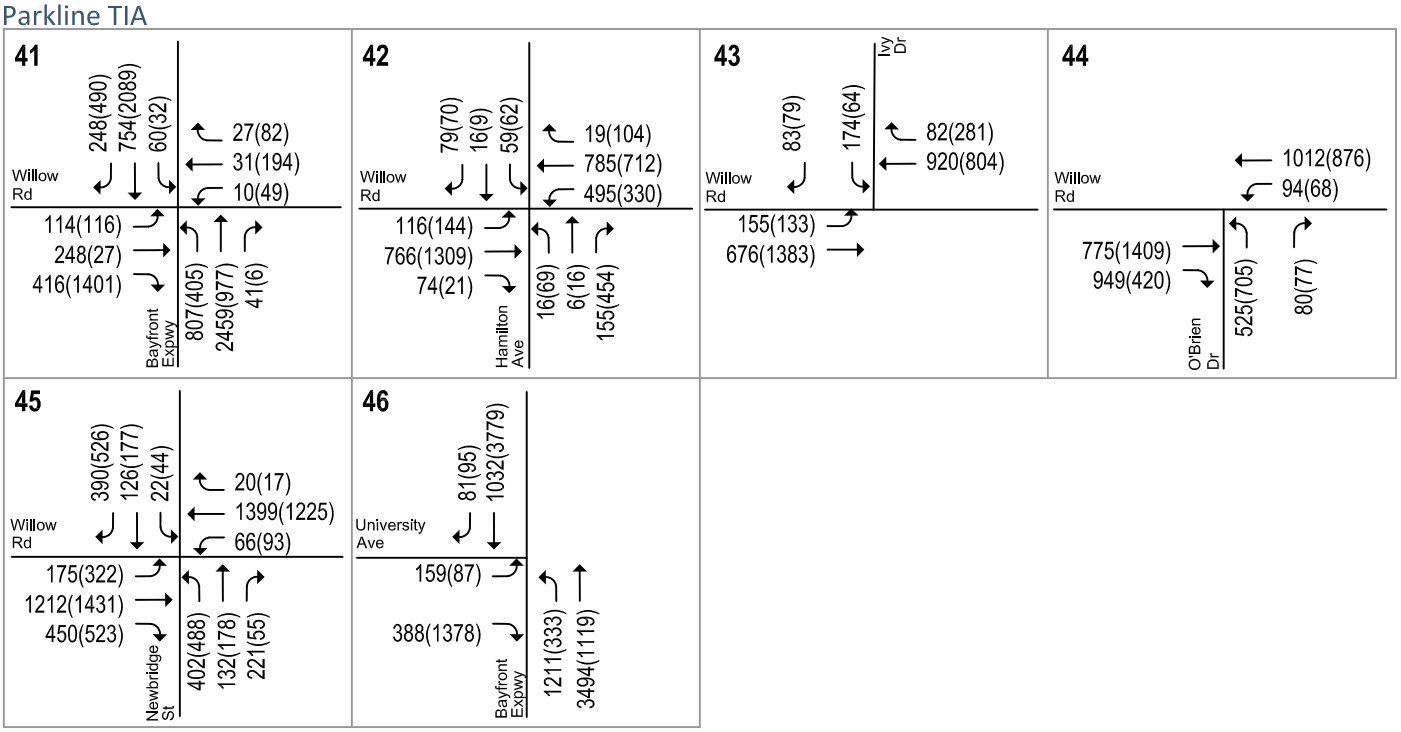


LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 24
Cumulative Plus Project Variant Traffic Volumes

NORTH
Not to Scale



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 24
Cumulative Plus Project Variant Traffic Volumes

Table 19
Near-Term (2027) Intersection Level of Service Comparison for Project Variant

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Project Conditions[2]							
				Propsoed Project[3]				Project Variant[3]			
				Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay
1	US 101 NB Off-Ramp & Marsh Rd	AM	Signal	17.5	B	<4	<0.8	17.5	B	<4	<0.8
		PM		20.8	C	<4	<0.8	20.8	C	<4	<0.8
2	US 101 SB Off-Ramp & Marsh Rd	AM	Signal	25.4	C	<4	6.3	25.4	C	<4	<0.8
		PM		23.2	C	<4	<0.8	23.2	C	<4	<0.8
3	Scott Dr & Marsh Rd	AM	Signal	22.8	C	<4	<0.8	22.8	C	<4	<0.8
		PM		24.3	C	<4	<0.8	24.3	C	<4	<0.8
4	Florence St/Bohannon Dr & Marsh Rd	AM	Signal	35.9	D	<4	3.3	36.2	D	<4	<0.8
		PM		34.1	C	<4	1.3	34.1	C	<4	<0.8
5	Bay Rd & Marsh Rd	AM	Signal	18.5	B	<4	<0.8	18.5	B	<4	<0.8
		PM		21.9	C	<4	<0.8	21.8	C	<4	<0.8
6	Bay Rd & Ringwood Ave	AM	AWSC	**89.2**	**F**	29.0	29.0	**92.4**	**F**	<4	3.2
		PM		18.5	C	4.4	4.4	19.0	C	<4	<0.8
7	US 101 NB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	4.2	1.9	**OVERSAT**	**F**	<4	<0.8
		PM		**OVERSAT**	**F**	<4	<0.8	**OVERSAT**	**F**	<4	<0.8
8	US 101 SB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	<4	<0.8	**OVERSAT**	**F**	<4	<0.8
		PM		**OVERSAT**	**F**	<4	<0.8	**OVERSAT**	**F**	<4	<0.8
9	Bay Rd & Willow Rd	AM	Signal	**OVERSAT**	**F**	60.2	65.1	**OVERSAT**	**F**	9.4	10.5
		PM		**OVERSAT**	**F**	<4	4.0	**OVERSAT**	**F**	<4	<0.8
10	Durham St & Willow Rd	AM	Signal	**OVERSAT**	**F**	51.3	86.8	**OVERSAT**	**F**	<4	3.0
		PM		**OVERSAT**	**F**	<4	0.8	**OVERSAT**	**F**	<4	<0.8
11	Coleman Ave & Willow Rd	AM	Signal	20.5	C	5.5	7.2	20.8	C	<4	<0.8
		PM		19.6	B	5.9	8.5	19.8	B	<4	<0.8
12	Gilbert Ave & Willow Rd	AM	Signal	18.3	B	<4	5.9	18.4	B	<4	<0.8
		PM		24.8	C	12.5	20.3	25.3	C	<4	0.9
13	Middlefield Rd & Willow Rd	AM	Signal	**68.6**	**E**	17.7	34.8	**69.1**	**E**	<4	1.1
		PM		**61.7**	**E**	8.0	10.0	**62.0**	**E**	<4	<0.8
14	Laurel St & Willow Rd	AM	AWSC	10.4	B	<4	<0.8	10.1	B	<4	<0.8
		PM		10.4	B	<4	<0.8	10.3	B	<4	<0.8
15	Middlefield Rd & Ravenswood Ave[4]	AM	Signal	**80.4**	**F**	45.5	--	52.0	D	17.1	--
		PM		**59.2**	**E**	27.7	--	31.7	C	<4	--
16	Middlefield Rd & D St/Ringwood Ave[4]	AM	Signal	**60.5**	**E**	28.1	--	**68.2**	**E**	35.8	--
		PM		**OVERSAT**	**F**	>4	--	**OVERSAT**	**F**	**>4**	--
17	Middlefield Rd & Seminary Dr[4]	AM	TWSC	**OVERSAT**	**F**	>4	--	**60.1**	**E**	50.3	--
		PM		**OVERSAT**	**F**	>4	--	46.9	D	35.1	--
18	Proj Dwy B1 E & Ravenswood Ave[4]	AM	Signal	7.2	A	7.2	--	20.9	C	20.9	--
		PM		11.4	B	11.4	--	31.8	D	31.8	--
19	Proj Dwy B1 West & Ravenswood Ave[4]	AM	TWSC	26.3	D	26.3	--	**40.0**	**E**	40.0	--
		PM		**58.9**	**F**	58.9	--	**OVERSAT**	**F**	**>4**	--
20	Proj Dwy/Pine St & Ravenswood Ave[4]	AM	TWSC	24.2	C	5.4	--	**OVERSAT**	**F**	**>4**	--
		PM		**OVERSAT**	**F**	>4	--	**>120**	**F**	**>4**	--
21	Laurel St & Encinal Ave	AM	AWSC	20.2	C	<4	1.7	20.7	C	<4	<0.8
		PM		10.8	B	<4	1.0	10.9	B	<4	<0.8
22	Laurel St & Glenwood Ave	AM	AWSC	**58.9**	**F**	25.9	25.9	64.9	**F**	6.0	6.0
		PM		10.5	B	<4	<0.8	10.5	B	<4	<0.8
23	Laurel St & Oak Grove Ave	AM	Signal	22.7	C	<4	2.2	22.8	C	<4	<0.8
		PM		17.5	B	<4	1.6	17.7	B	<4	<0.8
24	Laurel St & Ravenswood Ave[4]	AM	Signal	44.6	D	10.8	--	37.0	D	<4	--
		PM		52.4	D	<4	--	45.6	D	<4	--
25	Laurel St & Proj Dwy N	AM	TWSC	12.4	B	12.4	12.4	7.9	A	<4	<0.8
		PM		12.6	B	12.6	12.6	8.0	A	<4	<0.8
26	Laurel St & Proj Dwy S	AM	TWSC	9.1	A	<4	<0.8	9.1	A	<4	<0.8
		PM		9.3	A	<4	<0.8	9.3	A	<4	<0.8
27	Laurel St & Burgess Dr	AM	AWSC	9.5	A	<4	<0.8	9.4	A	<4	<0.8
		PM		9.6	A	<4	<0.8	9.6	A	<4	<0.8

Table 19 (continued)
Near-Term (2027) Intersection Level of Service Comparison for Project Variant

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Project Conditions[2]							
				Propsoed Project[3]				Project Variant[3]			
				Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay
28	El Camino Real & Encinal Ave	AM	Signal	47.6	D	<4	32.1	47.7	D	<4	<0.8
	Menlo College Northbound			*47.0*	*D*	*<4*	*<0.8*	*47.0*	*D*	*<4*	*<0.8*
	Encinal Ave Southbound			***>120***	***F***	*<4*	*<0.8*	***>120***	***F***	*<4*	*<0.8*
		PM	Signal	36.3	D	6.0	2.8	36.7	D	<4	<0.8
	Menlo College Northbound			*40.6*	*D*	*<4*	*<0.8*	*40.6*	*D*	*<4*	*<0.8*
	Encinal Ave Southbound			***>120***	***F***	*16.3*	*32.2*	***>120***	***F***	*<4*	*<0.8*
29	El Camino Real & Glenwood Ave	AM	Signal	52.1	D	<4	1.5	52.3	D	<4	<0.8
	Valparaiso Ave Northbound			***60.3***	***E***	*<4*	*<0.8*	***60.4***	***E***	*<4*	*<0.8*
	Glenwood Ave Southbound			***61.0***	***E***	*<4*	*<0.8*	***60.9***	***E***	*<4*	*<0.8*
		PM	Signal	35.7	D	<4	3.0	35.8	D	<4	<0.8
	Valparaiso Ave Northbound			***64.0***	***E***	*<4*	*<0.8*	***64.0***	***E***	*<4*	*<0.8*
	Glenwood Ave Southbound			***65.9***	***E***	*<4*	*<0.8*	***65.8***	***E***	*<4*	*<0.8*
30	El Camino Real & Oak Grove Ave	AM	Signal	34.3	C	<4	<0.8	34.4	C	<4	<0.8
	Oak Grove Ave Northbound			***56.4***	***E***	*<4*	*<0.8*	***56.4***	***E***	*<4*	*<0.8*
	Oak Grove Ave Southbound			***65.5***	***E***	*<4*	*<0.8*	***65.5***	***E***	*<4*	*<0.8*
		PM	Signal	26.2	C	<4	<0.8	26.2	C	<4	<0.8
	Oak Grove Ave Northbound			***68.1***	***E***	*<4*	*<0.8*	***68.1***	***E***	*<4*	*<0.8*
	Oak Grove Ave Southbound			***71.1***	***E***	*<4*	*<0.8*	***71.2***	***E***	*<4*	*<0.8*
31	El Camino Real & Santa Cruz Ave	AM	Signal	7.8	A	<4	<0.8	7.8	A	<4	<0.8
	Santa Cruz Ave Northbound			***67.3***	***E***	*<4*	*<0.8*	***67.3***	***E***	*<4*	*<0.8*
	Santa Cruz Ave Southbound			***68.2***	***E***	*<4*	*<0.8*	***68.2***	***E***	*<4*	*<0.8*
		PM	Signal	7.7	A	<4	<0.8	7.6	A	<4	<0.8
	Santa Cruz Ave Northbound			***73.5***	***E***	*<4*	*<0.8*	***73.5***	***E***	*<4*	*<0.8*
	Santa Cruz Ave Southbound			***73.4***	***E***	*<4*	*<0.8*	***73.4***	***E***	*<4*	*<0.8*
32	El Camino Real & Ravenswood Ave	AM	Signal	53.5	D	11.5	47.0	54.0	D	<4	<0.8
	Menlo Ave Northbound			***104.8***	***F***	*14.5*	*15.5*	***104.8***	***F***	*<4*	*<0.8*
	Ravenswood Ave Southbound			***62.2***	***E***	*<4*	*2.1*	***62.6***	***E***	*<4*	*<0.8*
		PM	Signal	41.9	D	5.7	7.1	42.6	D	<4	8.9
	Menlo Ave Northbound			***65.5***	***E***	*<4*	*<0.8*	***65.3***	***E***	*<4*	*<0.8*
	Ravenswood Ave Southbound			***57.5***	***E***	*<4*	*1.1*	***57.6***	***E***	*<4*	*<0.8*
33	El Camino Real & Roble Ave	AM	Signal	6.2	A	<4	6.0	6.2	A	<4	<0.8
	Roble Ave Northbound			***66.4***	***E***	*<4*	*<0.8*	***66.4***	***E***	*<4*	*<0.8*
	Roble Ave Southbound			***63.3***	***E***	*<4*	*<0.8*	***63.3***	***E***	*<4*	*<0.8*
		PM	Signal	9.4	A	<4	<0.8	9.3	A	<4	<0.8
	Roble Ave Northbound			***71.0***	***E***	*<4*	*<0.8*	***71.0***	***E***	*<4*	*<0.8*
	Roble Ave Southbound			***62.3***	***E***	*<4*	*<0.8*	***62.3***	***E***	*<4*	*<0.8*
34	El Camino Real & Middle Ave	AM	Signal	15.3	B	<4	<0.8	15.2	B	<4	<0.8
	Middle Ave Northbound			***62.9***	***E***	*<4*	*<0.8*	***62.9***	***E***	*<4*	*<0.8*
		PM	Signal	18.1	B	<4	<0.8	18.0	B	<4	<0.8
	Middle Ave Northbound			***62.2***	***E***	*<4*	*<0.8*	***62.2***	***E***	*<4*	*<0.8*
35	El Camino Real & Cambridge Ave	AM	Signal	4.8	A	<4	<0.8	4.8	A	<4	<0.8
	Cambridge Ave Northbound			***64.5***	***E***	*<4*	*<0.8*	***64.5***	***E***	*<4*	*<0.8*
		PM	Signal	5.7	A	<4	<0.8	5.7	A	<4	<0.8
	Cambridge Ave Northbound			***69.2***	***E***	*<4*	*<0.8*	***69.2***	***E***	*<4*	*<0.8*
36	University Dr & Valparaiso Ave	AM	Signal	17.8	B	<4	<0.8	17.8	B	<4	<0.8
		PM		14.6	B	<4	<0.8	14.6	B	<4	<0.8
37	University Dr & Santa Cruz Ave	AM	Signal	10.1	B	<4	<0.8	10.1	B	<4	<0.8
		PM		11.7	B	<4	<0.8	11.8	B	<4	<0.8
38	Orange Ave/Santa Cruz Ave/Avy Ave	AM	AWSC	21.9	C	<4	1.7	22.0	C	<4	<0.8
		PM		27.3	D	4.1	4.1	27.5	D	<4	<0.8
39	Santa Cruz Ave & Sand Hill Rd	AM	Signal	47.2	D	<4	2.5	47.2	D	<4	<0.8
		PM		41.9	D	<4	<0.8	41.9	D	<4	<0.8
40	Santa Cruz Ave & Junipero Serra Blvd	AM	Signal	36.5	D	<4	<0.8	36.5	D	<4	<0.8
		PM		39.3	D	<4	<0.8	39.3	D	<4	<0.8
41	Bayfront Expwy & Willow Rd (SR 114)*	AM	Signal	**OVERSAT**	**F**	<4	<0.8	19.9	**B**	<4	<0.8
		PM		**OVERSAT**	**F**	<4	<0.8	**>120**	**F**	<4	<0.8

Table 19 (continued)
Near-Term (2027) Intersection Level of Service Comparison for Project Variant

#	Intersection	Peak Hour	Traffic Control	Near-Term (2027) Project Conditions[2]							
				Propsoed Project[3]				Project Variant[3]			
				Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay
42	Hamilton Ave & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	7.9	20.0	**>120**	**F**	<4	4.0
	Hamilton Ave Northbound			*30.7*	*C*	*<4*	*<0.8*	*30.7*	*C*	*<4*	*<0.8*
	Hamilton Ave Southbound			*40.4*	*D*	*<4*	*<0.8*	*40.4*	*D*	*<4*	*<0.8*
		PM	Signal	**OVERSAT**	**F**	8.2	5.4	**>120**	**F**	<4	<0.8
	Hamilton Ave Northbound			***>120***	***F***	*<4*	*<0.8*	***>120***	***F***	*<4*	*<0.8*
	Hamilton Ave Southbound			***>120***	***F***	*<4*	*<0.8*	***>120***	***F***	*<4*	*<0.8*
43	Ivy Dr & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	<4	3.8	**32.5**	**C**	<4	<0.8
	Ivy Dr Southbound			***76.4***	***E***	*<4*	*<0.8*	***76.4***	***E***	*<4*	*<0.8*
		PM	Signal	**OVERSAT**	**F**	9.8	15.9	**55.0**	**E**	<4	<0.8
	Ivy Dr Southbound			***66.8***	***E***	*<4*	*<0.8*	***66.8***	***E***	*<4*	*<0.8*
44	O'Brien Dr & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	<4	4.4	35.8	D	<4	<0.8
	O'Brien Dr Northbound			***117.8***	***F***	*6.9*	*6.8*	***117.8***	***F***	*<4*	*<0.8*
		PM	Signal	**OVERSAT**	**F**	11.9	20.4	**>120**	**F**	<4	<0.8
	O'Brien Dr Northbound			***>120***	***F***	*8.4*	*8.4*	***>120***	***F***	*<4*	*<0.8*
45	Newbridge St & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	115.5	68.6	**>120**	**F**	<4	1.1
	Bay Rd Northbound			*39.9*	*D*	*<4*	*<0.8*	*39.8*	*D*	*<4*	*<0.8*
	Newbridge St Southbound			***62.1***	***E***	*<4*	*<0.8*	***62.1***	***E***	*<4*	*<0.8*
		PM	Signal	**OVERAT**	**F**	96.6	80.1	**>120**	**F**	<4	<0.8
	Bay Rd Northbound			*41.3*	*D*	*8.2*	*<0.8*	*41.3*	*D*	*<4*	*<0.8*
	Newbridge St Southbound			***79.9***	***E***	*20.1*	*17.8*	***79.9***	***E***	*<4*	*<0.8*
46	Bayfront Expwy & University Ave*	AM	Signal	16.5	B	<4	<0.8	16.5	B	<4	<0.8
		PM		**101.5**	**F**	4.0	5.3	**101.6**	**F**	<4	<0.8

Notes:

* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control.

[1] Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

[2] Average delay and level of service for the study intersections (7, 8, 41-45) were based off the microsimulation analysis conducted for the Willow Village project. Intersections that showed OVERSAT and LOS F were assumed to operate the same for this project and under project conditions. For intersections that were not shown OVERSAT and LOS F in the Willow Village project, the results from the VISTRO analysis done for this project are reported. "OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by

[3] This assumes 100% office scenario.

[4] Intersections fronting the project site are analyzed using a microsimulation model. A cumulative analysis is not completed. Certain intersections would experience capacity issues where the demand cannot be served by the intersection, and are indicated with OVERSAT. Oversaturated intersections would operate at LOS F.

Bold indicates substandard level of service

Bold indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

Table 20
Cumulative (2040) Intersection Level of Service Comparison for Project Variant

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Project Conditions[2]							
				Propsoed Project[3]				Project Variant[3]			
				Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Avg. Critical Delay
1	US 101 NB Off-Ramp & Marsh Rd	AM	Signal	22.7	C	<4	<0.8	22.7	C	<4	<0.8
		PM		23.4	C	<4	<0.8	23.5	C	<4	<0.8
2	US 101 SB Off-Ramp & Marsh Rd	AM	Signal	23.2	C	<4	<0.8	23.1	C	<4	<0.8
		PM		24.5	C	<4	<0.8	24.5	C	<4	<0.8
3	Scott Dr & Marsh Rd	AM	Signal	29.0	C	<4	<0.8	29.0	C	<4	<0.8
		PM		29.2	C	<4	<0.8	29.2	C	<4	<0.8
4	Florence St/Bohannon Dr & Marsh Rd	AM	Signal	**75.7**	**E**	<4	1.5	**76.4**	**E**	<4	6.4
		PM		52.6	D	5.3	13.4	52.9	D	<4	<0.8
5	Bay Rd & Marsh Rd	AM	Signal	31.3	C	<4	2.2	31.3	C	<4	<0.8
		PM		51.5	D	<4	<0.8	51.5	D	<4	<0.8
6	Bay Rd & Ringwood Ave	AM	AWSC	**>120**	**F**	29.8	29.8	**>120**	**F**	<4	2.1
		PM		**47.9**	**E**	15.5	15.5	**49.7**	**E**	<4	1.8
7	US 101 NB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	<4	1.2	14.3	B	<4	<0.8
		PM		**OVERSAT**	**F**	<4	<0.8	**87.7**	**F**	<4	<0.8
8	US 101 SB Ramps & Willow Rd (SR 114)	AM	Signal	**OVERSAT**	**F**	<4	<0.8	38.5	D	<4	<0.8
		PM		**OVERSAT**	**F**	<4	<0.8	36.7	D	<4	<0.8
9	Bay Rd & Willow Rd	AM	Signal	**OVERSAT**	**F**	22.3	54.4	**OVERSAT**	**F**	<4	4.4
		PM		**OVERSAT**	**F**	<4	<0.8	13.2	B	<4	<0.8
10	Durham St & Willow Rd	AM	Signal	**OVERSAT**	**F**	46.3	83.1	**OVERSAT**	**F**	<4	2.6
		PM		**OVERSAT**	**F**	<4	1.5	15.7	B	<4	<0.8
11	Coleman Ave & Willow Rd	AM	Signal	22.6	C	<4	<0.8	22.7	C	<4	<0.8
		PM		19.3	B	<4	<0.8	19.4	B	<4	<0.8
12	Gilbert Ave & Willow Rd	AM	Signal	16.7	B	<4	<0.8	16.7	B	<4	<0.8
		PM		18.1	B	4.3	7.9	18.3	B	<4	<0.8
13	Middlefield Rd & Willow Rd	AM	Signal	**59.0**	**E**	<4	4.1	**58.6**	**E**	<4	<0.8
		PM		**66.7**	**E**	7.7	10.5	**67.4**	**E**	<4	1.4
14	Laurel St & Willow Rd	AM	AWSC	11.7	B	<4	<0.8	11.4	B	<4	<0.8
		PM		10.9	B	<4	<0.8	10.7	B	<4	<0.8
15	Middlefield Rd & Ravenswood Ave [4]	AM	Signal	see footnote 4							
		PM									
16	Middlefield Rd & D St/Ringwood Ave [4]	AM	Signal	see footnote 4							
		PM									
17	Middlefield Rd & Seminary Dr [4]	AM	TWSC	see footnote 4							
		PM									
18	Proj Dwy B1 E & Ravenswood Ave [4]	AM	Signal	see footnote 4							
		PM									
19	Proj Dwy B1 West & Ravenswood Ave [4]	AM	TWSC	see footnote 4							
		PM									
20	Proj Dwy/Pine St & Ravenswood Ave [4]	AM	TWSC	see footnote 4							
		PM									
21	Laurel St & Encinal Ave	AM	AWSC	**46.0**	**E**	8.1	8.1	**47.3**	**E**	<4	1.3
		PM		14.4	B	<4	1.7	14.6	B	<4	<0.8
22	Laurel St & Glenwood Ave	AM	AWSC	**116.9**	**F**	22.1	22.1	**>120**	**F**	<4	3.9
		PM		14.5	B	<4	1.3	14.7	B	<4	<0.8
23	Laurel St & Oak Grove Ave	AM	Signal	41.0	D	10.8	12.4	41.8	D	<4	0.9
		PM		30.3	C	4.1	4.6	30.8	C	<4	<0.8
24	Laurel St & Ravenswood Ave [4]	AM	Signal	see footnote 4							
		PM									
25	Laurel St & Proj Dwy N	AM	TWSC	15.2	C	15.2	15.2	8.3	A	<4	<0.8
		PM		16.0	C	16.0	16.0	8.3	A	<4	<0.8
26	Laurel St & Proj Dwy S	AM	TWSC	10.7	B	<4	<0.8	10.6	B	<4	<0.8
		PM		11.0	B	<4	<0.8	10.9	B	<4	<0.8
27	Laurel St & Burgess Dr	AM	AWSC	11.8	B	<4	<0.8	11.6	B	<4	<0.8
		PM		12.2	B	<4	0.9	12.0	B	<4	<0.8

Table 20 (continued)
Cumulative (2040) Intersection Level of Service Comparison for Project Variant

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Project Conditions[2]							
				Propsoed Project[3]				Project Variant[3]			
				Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Avg. Critical Delay
28	El Camino Real & Encinal Ave	AM	Signal	76.5	E	<4	4.1	77.4	E	<4	<0.8
	Menlo College Northbound			*46.8*	*D*	*<4*	*<0.8*	*46.8*	*D*	*<4*	*<0.8*
	Encinal Ave Southbound			***>120***	***F***	*11.7*	*<0.8*	***>120***	***F***	*5.1*	*<0.8*
		PM	Signal	51.1	D	11.5	3.4	51.7	D	<4	<0.8
	Menlo College Northbound			*40.6*	*D*	*<4*	*<0.8*	*40.6*	*D*	*<4*	*<0.8*
	Encinal Ave Southbound			***>120***	***F***	*54.1*	*<0.8*	***>120***	***F***	*<4*	*<0.8*
29	El Camino Real & Glenwood Ave	AM	Signal	39.4	D	<4	<0.8	39.6	D	<4	<0.8
	Valparaiso Ave Northbound			***62.2***	***E***	*<4*	*1.0*	***62.2***	***E***	*<4*	*<0.8*
	Glenwood Ave Southbound			***66.1***	***E***	*<4*	*1.6*	***66.8***	***E***	*<4*	*0.9*
		PM	Signal	35.0	D	<4	2.4	35.1	D	<4	<0.8
	Valparaiso Ave Northbound			***63.8***	***E***	*<4*	*<0.8*	***63.8***	***E***	*<4*	*<0.8*
	Glenwood Ave Southbound			***66.0***	***E***	*<4*	*<0.8*	***66.0***	***E***	*<4*	*<0.8*
30	El Camino Real & Oak Grove Ave	AM	Signal	36.0	D	<4	11.3	36.0	D	<4	<0.8
	Oak Grove Ave Northbound			***52.5***	***D***	*<4*	*<0.8*	***52.5***	***D***	*<4*	*<0.8*
	Oak Grove Ave Southbound			***65.2***	***E***	*<4*	*<0.8*	***64.7***	***E***	*<4*	*<0.8*
		PM	Signal	28.6	C	<4	<0.8	28.6	C	<4	<0.8
	Oak Grove Ave Northbound			***64.2***	***E***	*<4*	*<0.8*	***64.2***	***E***	*<4*	*<0.8*
	Oak Grove Ave Southbound			***70.9***	***E***	*<4*	*<0.8*	***70.9***	***E***	*<4*	*<0.8*
31	El Camino Real & Santa Cruz Ave	AM	Signal	8.7	A	<4	<0.8	8.7	A	<4	<0.8
	Santa Cruz Ave Northbound			***66.0***	***E***	*<4*	*<0.8*	***66.0***	***E***	*<4*	*<0.8*
	Santa Cruz Ave Southbound			***68.2***	***E***	*<4*	*<0.8*	***68.2***	***E***	*<4*	*<0.8*
		PM	Signal	11.3	B	<4	<0.8	11.3	B	<4	<0.8
	Santa Cruz Ave Northbound			***71.2***	***E***	*<4*	*<0.8*	***71.2***	***E***	*<4*	*<0.8*
	Santa Cruz Ave Southbound			***70.2***	***E***	*<4*	*<0.8*	***70.2***	***E***	*<4*	*<0.8*
32	El Camino Real & Ravenswood Ave	AM	Signal	56.9	E	5.2	5.8	**57.0**	**E**	<4	<0.8
	Menlo Ave Northbound			***>120***	***F***	*24.9*	*25.6*	***>120***	***F***	*<4*	*<0.8*
	Ravenswood Ave Southbound			***66.8***	***E***	*<4*	*4.7*	***67.1***	***E***	*<4*	*<0.8*
		PM	Signal	43.7	D	<4	1.1	44.1	D	<4	<0.8
	Menlo Ave Northbound			***68.7***	***E***	*<4*	*3.3*	***68.8***	***E***	*<4*	*<0.8*
	Ravenswood Ave Southbound			***56.4***	***E***	*<4*	*2.1*	***56.4***	***E***	*<4*	*<0.8*
33	El Camino Real & Roble Ave	AM	Signal	8.9	A	<4	6.0	8.8	A	<4	<0.8
	Roble Ave Northbound			***65.0***	***E***	*<4*	*<0.8*	***65.0***	***E***	*<4*	*<0.8*
	Roble Ave Southbound			***57.4***	***E***	*<4*	*<0.8*	***57.4***	***E***	*<4*	*<0.8*
		PM	Signal	11.4	B	<4	<0.8	11.4	B	<4	<0.8
	Roble Ave Northbound			***70.2***	***E***	*<4*	*<0.8*	***70.2***	***E***	*<4*	*<0.8*
	Roble Ave Southbound			***61.4***	***E***	*<4*	*<0.8*	***61.4***	***E***	*<4*	*<0.8*
34	El Camino Real & Middle Ave	AM	Signal	19.3	B	<4	<0.8	19.2	B	<4	<0.8
	Middle Ave Northbound			***61.6***	***E***	*<4*	*<0.8*	***61.6***	***E***	*<4*	*<0.8*
		PM	Signal	18.7	B	<4	<0.8	18.7	B	<4	<0.8
	Middle Ave Northbound			***62.0***	***E***	*<4*	*<0.8*	***62.0***	***E***	*<4*	*<0.8*
35	El Camino Real & Cambridge Ave	AM	Signal	5.0	A	<4	<0.8	5.0	A	<4	<0.8
	Cambridge Ave Northbound			***64.5***	***E***	*<4*	*<0.8*	***64.5***	***E***	*<4*	*<0.8*
		PM	Signal	7.4	A	<4	20.1	7.4	A	<4	<0.8
	Cambridge Ave Northbound			***69.2***	***E***	*<4*	*<0.8*	***69.2***	***E***	*<4*	*<0.8*
36	University Dr & Valparaiso Ave	AM	Signal	91.1	F	<4	1.5	91.5	F	<4	<0.8
		PM		56.2	E	<4	2.7	56.4	E	<4	<0.8
37	University Dr & Santa Cruz Ave	AM	Signal	11.5	B	<4	<0.8	11.5	B	<4	<0.8
		PM		15.5	B	<4	1.0	15.6	B	<4	<0.8
38	Orange Ave/Santa Cruz Ave/Avy Ave	AM	AWSC	24.3	C	<4	2.0	24.5	C	<4	<0.8
		PM		35.2	E	4.8	4.8	35.5	E	<4	<0.8
39	Santa Cruz Ave & Sand Hill Rd	AM	Signal	47.5	D	<4	2.6	47.5	D	<4	<0.8
		PM		43.5	D	<4	<0.8	43.6	D	<4	<0.8
40	Santa Cruz Ave & Junipero Serra Blvd	AM	Signal	38.4	D	<4	<0.8	38.4	D	<4	<0.8
		PM		40.0	D	<4	<0.8	40.1	D	<4	<0.8
41	Bayfront Expwy & Willow Rd (SR 114)*	AM	Signal	25.2	C	<4	<0.8	25.2	C	<4	<0.8
		PM		**>120**	**F**	<4	<0.8	>120	F	<4	<0.8

Table 20 (continued)
Cumulative (2040) Intersection Level of Service Comparison for Project Variant

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Project Conditions[2]							
				Propsoed Project[3]				Project Variant[3]			
				Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Avg. Critical Delay	Avg. Delay (sec)[1]	LOS	Incr. in Avg. Delay	Avg. Critical Delay
42	Hamilton Ave & Willow Rd (SR 114)	AM	Signal	**59.7**	**E**	6.6	14.6	**61.0**	**E**	<4	2.6
	Hamilton Ave Northbound			*60.6*	*E*	*<4*	*<0.8*	*60.6*	*E*	*<4*	*<0.8*
	Hamilton Ave Southbound			*66.5*	*E*	*<4*	*<0.8*	*66.5*	*E*	*<4*	*<0.8*
		PM	Signal	**>120**	**F**	8.5	6.9	**>120**	**F**	<4	<0.8
	Hamilton Ave Northbound			***>120***	***F***	*<4*	*<0.8*	***>120***	***F***	*<4*	*<0.8*
	Hamilton Ave Southbound			***>120***	***F***	*<4*	*<0.8*	*>120*	*F*	*<4*	*<0.8*
43	Ivy Dr & Willow Rd (SR 114)	AM	Signal	**83.8**	**F**	<4	<0.8	83.7	F	<4	<0.8
	Ivy Dr Southbound			***76.9***	***E***	*<4*	*<0.8*	*76.9*	*E*	*<4*	*<0.8*
		PM	Signal	**60.2**	**E**	8.5	13.5	60.7	E	<4	<0.8
	Ivy Dr Southbound			***66.9***	***E***	*<4*	*<0.8*	*66.9*	*E*	*<4*	*<0.8*
44	O'Brien Dr & Willow Rd (SR 114)	AM	Signal	**55.3**	**E**	<4	2.4	**55.3**	**E**	<4	<0.8
	O'Brien Dr Northbound			***>120***	***F***	*8.5*	*8.7*	***>120***	***F***	*<4*	*<0.8*
		PM	Signal	**>120**	**F**	6.6	11.0	**>120**	**F**	<4	<0.8
	O'Brien Dr Northbound			***>120***	***F***	*8.5*	*8.7*	***>120***	***F***	*<4*	*<0.8*
45	Newbridge St & Willow Rd (SR 114)	AM	Signal	**>120**	**F**	76.9	59.8	**>120**	**F**	<4	1.2
	Bay Rd Northbound			*38.3*	*D*	*<4*	*<0.8*	*38.3*	*D*	*<4*	*<0.8*
	Newbridge St Southbound			***63.9***	***E***	*<4*	*2.3*	***63.9***	***E***	*<4*	*<0.8*
		PM	Signal	**>120**	**F**	18.7	8.1	**>120**	**F**	<4	<0.8
	Bay Rd Northbound			*39.0*	*D*	*<4*	*<0.8*	*39.0*	*D*	*<4*	*<0.8*
	Newbridge St Southbound			***>120***	***F***	*4.3*	*4.4*	***>120***	***F***	*<4*	*<0.8*
46	Bayfront Expwy & University Ave*	AM	Signal	17.7	B	<4	<0.8	17.7	B	<4	<0.8
		PM		**>120**	**F**	4.1	5.6	**>120**	**F**	<4	<0.8

Notes:

* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control.

[1] Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

[2] Average delay and level of service for the study intersections (7, 8, 41-45) were based off the microsimulation analysis conducted for the Willow Village project. Intersections that showed OVERSAT and LOS F were assumed to operate the same for this project and under project conditions. For intersections that were not shown OVERSAT and LOS F in the Willow Village project, the results from the VISTRO analysis done for this project are reported. "OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

[3] This assumes 100% office scenario.

[4] Intersections fronting the project site are analyzed using a microsimulation model. A cumulative analysis is not completed. Certain intersections would experience capacity issues where the demand cannot be served by the intersection, and are indicated with OVERSAT. Oversaturated intersections would operate at LOS F.

Bold indicates substandard level of service

Bold indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

Intersection Vehicle Queuing

The results of the intersection queuing analysis show that compared to the Proposed Project, the additional 250 units would only increase the 95th percentile queue by vehicle for two turning movements during the AM peak hour (see Table 21). The 95th percentile queue for the northbound left turn from the US 101 off-ramp to Willow Road would increase by 325 feet during the AM compared to the Proposed Project. The queue would be accommodated within the storage. The 95th percentile queue for the southbound left movement from El Camino Real to Ravenswood Avenue would increase by 475 feet during the AM peak hour compared to the Proposed Project. The queue length for the movements would exceed the storage capacity under the Proposed Project and would continue to do so under the Project Variant. Similar to the Proposed Project, there is no room to further extend this left-turn lane because of the short block between Ravenswood Avenue and Santa Cruz Avenue. It is also infeasible to add a turn lane to increase the storage capacity for the southbound left-turn lane.

As described in Chapter 3, the SimTraffic micro-simulation analysis was conducted to evaluate traffic operations and vehicles queuing along the Middlefield Road and Ravenswood Avenue corridors adjacent to the Project Site. There are no additional improvements that can be recommended given the existing right-of-way.

Table 21
Queueing Comparison for Project Variant

	US 101 NB Ramps/ Willow Rd		Middlefield Rd/ Willow Rd		El Camino Real/ Ravenswood Ave			
	NBL		SBL		SBL		WBL	
Measurement	AM	PM	AM	PM	AM	PM	AM	PM
Near-Term plus Proposed Project								
Volume (vph)	660	332	316	601	240	167	393	489
95th %. Queue (veh/ln)[1]	12	11	12	20	18	10	13	14
95th %. Queue (ft/ln)	300	275	300	500	450	250	325	350
Storage (ft/ln)	1265	1265	275	275	250	250	225	225
Adequate (Y/N)	Y	Y	**N**	**N**	**N**	Y	**N**	**N**
Near-Term plus Project Variant								
Volume (vph)	663	342	346	617	242	171	404	494
95th %. Queue (veh/ln)[1]	13	11	13	20	19	10	13	14
95th %. Queue (ft/ln)	325	275	325	500	475	250	325	350
Storage (ft/ln)	1265	1265	275	275	250	250	225	225
Adequate (Y/N)	Y	Y	**N**	**N**	**N**	Y	**N**	**N**

Notes:
NBL = northbound left-turn; SBL = southbound left-turn; WBL = westbound left-turn
[1] Vehicle queues are from Vistro outputs and are rounded up to the next whole number. Assumes one vehicle equals 25 feet of queue.

Freeway Segments and Freeway Ramps

The additional 250 residential units would generate an additional 50 peak direction (outbound) trips during the AM peak hour, and 44 peak direction (inbound) trips during the PM peak hour. This equates to at most 11 more trips on the freeways and freeway ramps in the peak directions (see Figure 6 for trip distribution), which would have a minimal effect on the studied freeway segments and ramps. Therefore, the analysis conclusions under the Proposed Project description for freeway segments and freeway ramps would remain the same under the Project Variant.

Parkline TIA

Technical Appendices

July 11, 2024

Appendix A
Traffic Counts

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 45AM FINAL
Site Code : 00000045
Start Date : 12/15/2022
Page No : 1

Groups Printed- Vehicles

	US-101 NB ON-RAMP Southbound					MARSH RD Westbound					US-101 NB RAMPS Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	316	144	0	0	460	52	0	165	0	217	60	158	0	0	218	895
07:15 AM	0	0	0	0	0	313	160	0	1	474	49	0	210	0	259	63	253	0	0	316	1049
07:30 AM	0	0	0	0	0	354	207	0	0	561	77	0	191	0	268	71	274	0	0	345	1174
07:45 AM	0	0	0	0	0	337	195	0	0	532	84	0	211	0	295	71	309	0	0	380	1207
Total	0	0	0	0	0	1320	706	0	1	2027	262	0	777	0	1039	265	994	0	0	1259	4325
08:00 AM	0	0	0	0	0	331	164	0	0	495	88	0	194	0	282	99	303	0	0	402	1179
08:15 AM	0	0	0	0	0	400	161	0	0	561	104	0	171	0	275	103	321	0	0	424	1260
08:30 AM	0	0	0	0	0	386	151	0	0	537	117	0	158	0	275	108	357	0	0	465	1277
08:45 AM	0	0	0	0	0	342	128	0	0	470	146	0	153	0	299	101	315	0	0	416	1185
Total	0	0	0	0	0	1459	604	0	0	2063	455	0	676	0	1131	411	1296	0	0	1707	4901
09:00 AM	0	0	0	0	0	335	129	0	0	464	146	0	126	0	272	93	289	0	0	382	1118
09:15 AM	0	0	0	0	0	266	141	0	0	407	131	0	119	0	250	61	223	0	0	284	941
09:30 AM	0	0	0	0	0	264	100	0	0	364	122	0	138	0	260	93	250	0	0	343	967
09:45 AM	0	0	0	0	0	237	106	0	1	344	130	0	106	1	237	82	266	0	0	348	929
Total	0	0	0	0	0	1102	476	0	1	1579	529	0	489	1	1019	329	1028	0	0	1357	3955
Grand Total	0	0	0	0	0	3881	1786	0	2	5669	1246	0	1942	1	3189	1005	3318	0	0	4323	13181
Apprch %	0	0	0	0		68.5	31.5	0	0		39.1	0	60.9	0		23.2	76.8	0	0		
Total %	0	0	0	0	0	29.4	13.5	0	0	43	9.5	0	14.7	0	24.2	7.6	25.2	0	0	32.8	

	US-101 NB ON-RAMP Southbound				MARSH RD Westbound				US-101 NB RAMPS Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	337	**195**	0	532	84	0	**211**	**295**	71	309	0	380	1207
08:00 AM	0	0	0	0	331	164	0	495	88	0	194	282	99	303	0	402	1179
08:15 AM	0	0	0	0	**400**	161	0	**561**	104	0	171	275	103	321	0	424	1260
08:30 AM	0	0	0	0	386	151	0	537	**117**	0	158	275	**108**	**357**	0	**465**	**1277**
Total Volume	0	0	0	0	1454	671	0	2125	393	0	734	1127	381	1290	0	1671	4923
% App. Total	0	0	0		68.4	31.6	0		34.9	0	65.1		22.8	77.2	0		
PHF	.000	.000	.000	.000	.909	.860	.000	.947	.840	.000	.870	.955	.882	.903	.000	.898	.964

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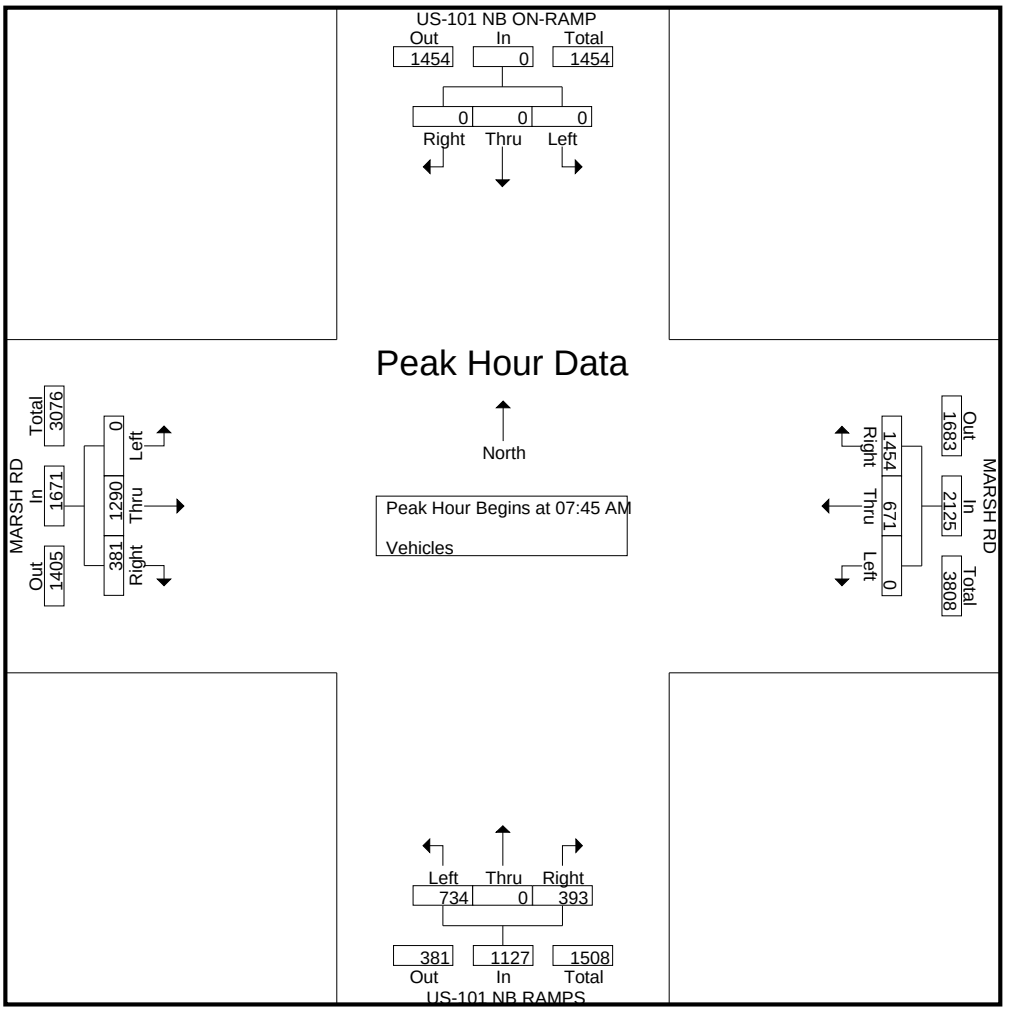

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File Name : 45PM FINAL
Site Code : 00000045
Start Date : 12/15/2022
Page No : 1

Groups Printed- Vehicles

	US-101 NB ON-RAMP Southbound					MARSH RD Westbound					US-101 NB RAMPS Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	283	165	0	0	448	49	0	139	0	188	116	488	0	0	604	1240
04:15 PM	0	0	0	0	0	261	157	0	0	418	39	0	177	0	216	134	500	0	0	634	1268
04:30 PM	0	0	0	0	0	257	165	0	0	422	35	0	173	0	208	95	462	0	0	557	1187
04:45 PM	0	0	0	0	0	304	225	0	0	529	43	0	169	1	213	102	498	0	0	600	1342
Total	0	0	0	0	0	1105	712	0	0	1817	166	0	658	1	825	447	1948	0	0	2395	5037
05:00 PM	0	0	0	0	0	304	142	0	0	446	45	0	149	0	194	116	519	0	0	635	1275
05:15 PM	0	0	0	0	0	308	195	0	0	503	41	0	134	0	175	79	521	0	0	600	1278
05:30 PM	0	0	0	0	0	261	223	0	1	485	48	0	153	0	201	91	454	0	0	545	1231
05:45 PM	0	0	0	0	0	264	189	0	0	453	48	0	145	0	193	45	360	0	0	405	1051
Total	0	0	0	0	0	1137	749	0	1	1887	182	0	581	0	763	331	1854	0	0	2185	4835
06:00 PM	0	0	0	0	0	207	146	0	0	353	44	0	97	0	141	91	351	0	0	442	936
06:15 PM	0	0	0	0	0	210	155	0	0	365	38	0	120	0	158	67	344	0	0	411	934
06:30 PM	0	0	0	0	0	164	118	0	0	282	30	0	111	0	141	79	313	0	0	392	815
06:45 PM	0	0	0	0	0	179	115	0	1	295	32	0	99	0	131	96	288	0	0	384	810
Total	0	0	0	0	0	760	534	0	1	1295	144	0	427	0	571	333	1296	0	0	1629	3495
Grand Total	0	0	0	0	0	3002	1995	0	2	4999	492	0	1666	1	2159	1111	5098	0	0	6209	13367
Apprch %	0	0	0	0		60.1	39.9	0	0		22.8	0	77.2	0		17.9	82.1	0	0		
Total %	0	0	0	0	0	22.5	14.9	0	0	37.4	3.7	0	12.5	0	16.2	8.3	38.1	0	0	46.5	

	US-101 NB ON-RAMP Southbound				MARSH RD Westbound				US-101 NB RAMPS Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	304	**225**	0	**529**	43	0	**169**	**212**	102	498	0	600	**1341**
05:00 PM	0	0	0	0	304	142	0	446	45	0	149	194	**116**	519	0	**635**	1275
05:15 PM	0	0	0	0	**308**	195	0	503	41	0	134	175	79	**521**	0	600	1278
05:30 PM	0	0	0	0	261	223	0	484	**48**	0	153	201	91	454	0	545	1230
Total Volume	0	0	0	0	1177	785	0	1962	177	0	605	782	388	1992	0	2380	5124
% App. Total	0	0	0		60	40	0		22.6	0	77.4		16.3	83.7	0		
PHF	.000	.000	.000	.000	.955	.872	.000	.927	.922	.000	.895	.922	.836	.956	.000	.937	.955

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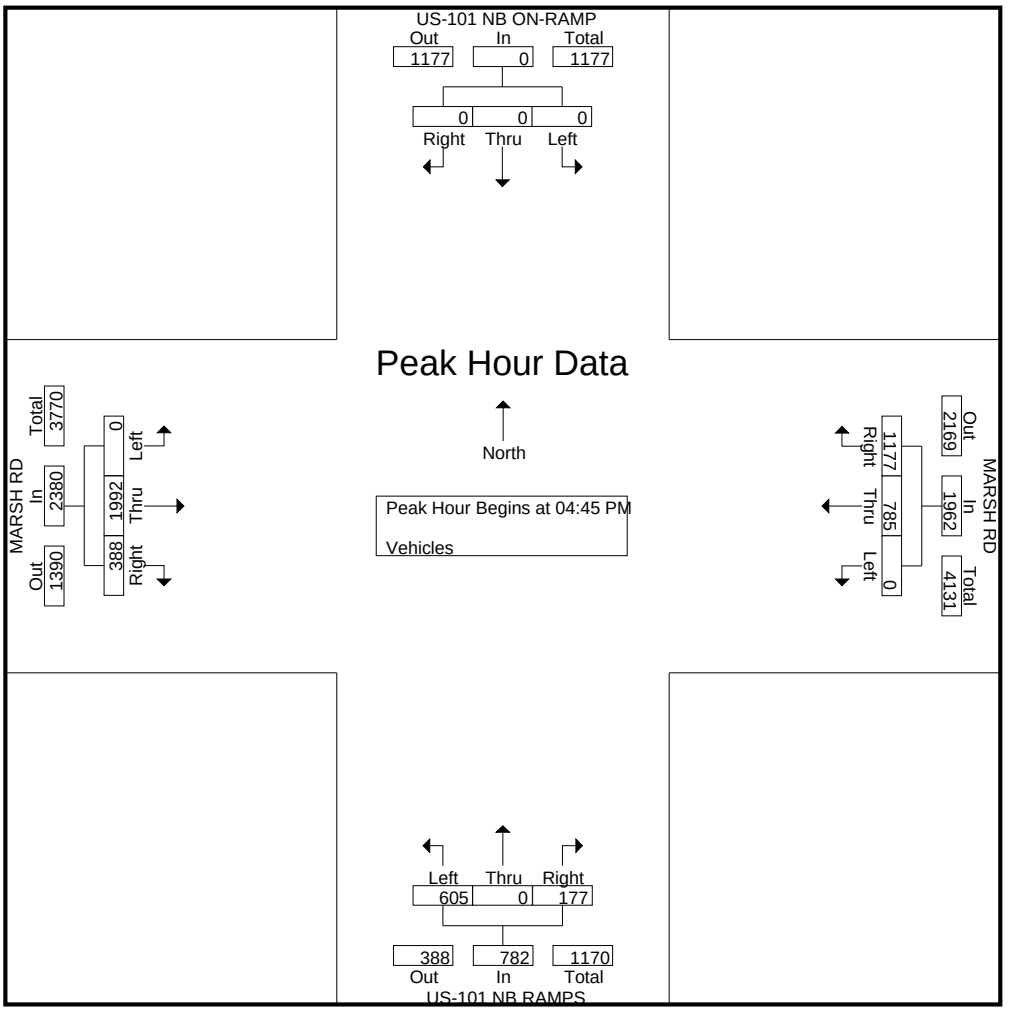

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File Name : 44AM FINAL
Site Code : 00000044
Start Date : 12/15/2022
Page No : 1

Groups Printed- Vehicles

	US-101 SB RAMPS Southbound					MARSH RD Westbound					US-101 SB ON-RAMP Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	58	0	126	0	184	26	277	0	0	303	0	0	0	0	0	108	99	0	0	207	694
07:15 AM	83	0	186	1	270	34	334	0	0	368	0	0	0	0	0	135	121	0	0	256	894
07:30 AM	118	0	225	0	343	34	338	0	0	372	0	0	0	0	0	160	143	0	0	303	1018
07:45 AM	116	0	234	0	350	25	372	0	0	397	0	0	0	0	0	192	171	0	0	363	1110
Total	375	0	771	1	1147	119	1321	0	0	1440	0	0	0	0	0	595	534	0	0	1129	3716
08:00 AM	116	0	221	0	337	35	337	0	0	372	0	0	0	0	0	162	167	0	0	329	1038
08:15 AM	125	0	231	0	356	30	310	0	0	340	0	0	0	0	0	163	194	0	0	357	1053
08:30 AM	107	0	252	0	359	30	305	0	0	335	0	0	0	0	0	133	211	0	0	344	1038
08:45 AM	154	0	229	0	383	21	273	0	0	294	0	0	0	0	0	123	178	0	0	301	978
Total	502	0	933	0	1435	116	1225	0	0	1341	0	0	0	0	0	581	750	0	0	1331	4107
09:00 AM	113	0	214	0	327	21	241	0	0	262	0	0	0	0	0	88	149	0	0	237	826
09:15 AM	110	0	174	0	284	28	228	0	0	256	0	0	0	0	0	113	124	0	0	237	777
09:30 AM	106	0	174	1	281	27	213	0	0	240	0	0	0	0	0	89	162	0	0	251	772
09:45 AM	129	0	216	0	345	28	190	0	0	218	0	0	0	0	0	98	151	0	0	249	812
Total	458	0	778	1	1237	104	872	0	0	976	0	0	0	0	0	388	586	0	0	974	3187
Grand Total	1335	0	2482	2	3819	339	3418	0	0	3757	0	0	0	0	0	1564	1870	0	0	3434	11010
Apprch %	35	0	65	0.1		9	91	0	0		0	0	0	0		45.5	54.5	0	0		
Total %	12.1	0	22.5	0	34.7	3.1	31	0	0	34.1	0	0	0	0	0	14.2	17	0	0	31.2	

	US-101 SB RAMPS Southbound				MARSH RD Westbound				US-101 SB ON-RAMP Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	116	0	234	350	25	**372**	0	**397**	0	0	0	0	**192**	171	0	**363**	**1110**
08:00 AM	116	0	221	337	**35**	337	0	372	0	0	0	0	162	167	0	329	1038
08:15 AM	**125**	0	231	356	30	310	0	340	0	0	0	0	163	194	0	357	1053
08:30 AM	107	0	**252**	**359**	30	305	0	335	0	0	0	0	133	**211**	0	344	1038
Total Volume	464	0	938	1402	120	1324	0	1444	0	0	0	0	650	743	0	1393	4239
% App. Total	33.1	0	66.9		8.3	91.7	0		0	0	0		46.7	53.3	0		
PHF	.928	.000	.931	.976	.857	.890	.000	.909	.000	.000	.000	.000	.846	.880	.000	.959	.955

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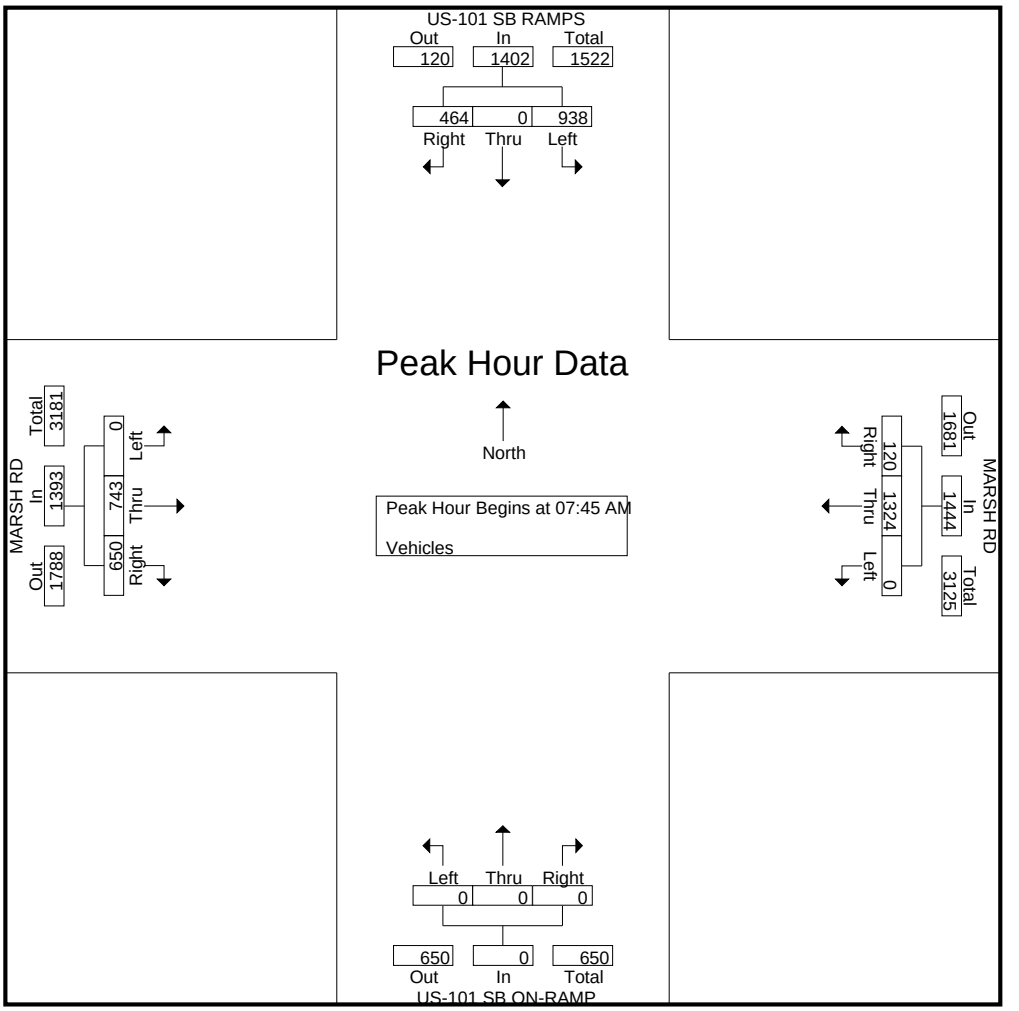

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File Name : 44PM FINAL
Site Code : 00000044
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Groups Printed- Vehicles

	US-101 SB RAMPS Southbound					MARSH RD Westbound					US-101 SB ON-RAMP Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	124	0	334	0	458	65	203	0	0	268	0	0	0	0	0	187	240	0	0	427	1153
04:15 PM	114	0	343	0	457	61	227	0	0	288	0	0	0	0	0	191	290	0	0	481	1226
04:30 PM	143	0	303	0	446	64	208	0	0	272	0	0	0	0	0	184	258	0	0	442	1160
04:45 PM	128	0	371	0	499	76	228	1	0	305	0	0	0	0	0	202	224	0	0	426	1230
Total	509	0	1351	0	1860	266	866	1	0	1133	0	0	0	0	0	764	1012	0	0	1776	4769
05:00 PM	121	0	386	0	507	66	203	0	0	269	0	0	0	0	0	234	266	0	0	500	1276
05:15 PM	138	0	356	0	494	85	233	0	0	318	0	0	0	0	0	205	243	0	0	448	1260
05:30 PM	117	0	315	0	432	101	245	0	0	346	0	0	0	0	0	189	229	0	0	418	1196
05:45 PM	121	0	264	0	385	100	220	0	0	320	0	0	0	1	1	164	156	0	0	320	1026
Total	497	0	1321	0	1818	352	901	0	0	1253	0	0	0	1	1	792	894	0	0	1686	4758
06:00 PM	113	0	265	0	378	71	170	0	0	241	0	0	0	0	0	136	168	0	0	304	923
06:15 PM	106	0	263	0	369	81	183	0	0	264	0	0	0	0	0	148	135	1	0	284	917
06:30 PM	100	0	241	1	342	65	160	0	0	225	0	0	0	0	0	108	140	0	0	248	815
06:45 PM	94	0	221	1	316	61	155	0	0	216	0	0	0	0	0	118	164	0	0	282	814
Total	413	0	990	2	1405	278	668	0	0	946	0	0	0	0	0	510	607	1	0	1118	3469
Grand Total	1419	0	3662	2	5083	896	2435	1	0	3332	0	0	0	1	1	2066	2513	1	0	4580	12996
Apprch %	27.9	0	72	0		26.9	73.1	0	0		0	0	0	100		45.1	54.9	0	0		
Total %	10.9	0	28.2	0	39.1	6.9	18.7	0	0	25.6	0	0	0	0	0	15.9	19.3	0	0	35.2	

	US-101 SB RAMPS Southbound				MARSH RD Westbound				US-101 SB ON-RAMP Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	128	0	371	499	76	228	**1**	305	0	0	0	0	202	224	0	426	1230
05:00 PM	121	0	**386**	**507**	66	203	0	269	0	0	0	0	**234**	**266**	0	**500**	**1276**
05:15 PM	**138**	0	356	494	85	233	0	318	0	0	0	0	205	243	0	448	1260
05:30 PM	117	0	315	432	**101**	**245**	0	**346**	0	0	0	0	189	229	0	418	1196
Total Volume	504	0	1428	1932	328	909	1	1238	0	0	0	0	830	962	0	1792	4962
% App. Total	26.1	0	73.9		26.5	73.4	0.1		0	0	0		46.3	53.7	0		
PHF	.913	.000	.925	.953	.812	.928	.250	.895	.000	.000	.000	.000	.887	.904	.000	.896	.972

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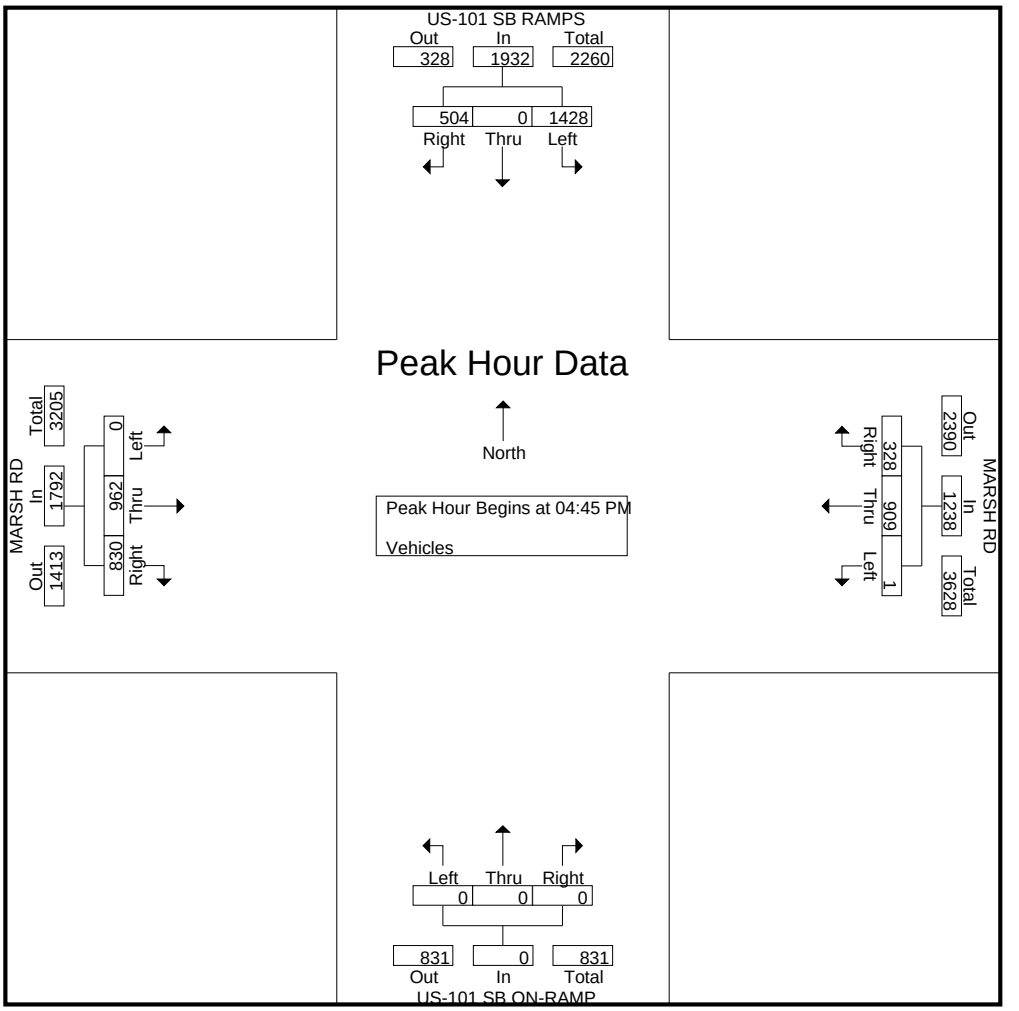

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6280 San Ignacio Ave Suite C
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File Name : 22AM FINAL
Site Code : 00000022
Start Date : 12/1/2022
Page No : 1

Groups Printed- Vehicles

	SCOTT DR Southbound					MARSH RD Westbound					SCOTT DR Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	15	0	15	17	114	43	0	174	10	0	3	0	13	0	79	1	0	80	282
07:15 AM	0	3	17	0	20	30	123	32	0	185	7	0	0	0	7	1	110	0	0	111	323
07:30 AM	0	3	36	0	39	29	152	38	0	219	7	1	1	1	10	0	146	1	0	147	415
07:45 AM	1	4	47	0	52	45	196	45	0	286	8	0	1	0	9	1	146	6	0	153	500
Total	1	10	115	0	126	121	585	158	0	864	32	1	5	1	39	2	481	8	0	491	1520
08:00 AM	0	2	39	0	41	53	228	37	0	318	10	1	5	0	16	2	193	1	0	196	571
08:15 AM	0	0	46	0	46	58	265	48	0	371	15	1	2	0	18	3	171	5	0	179	614
08:30 AM	1	0	58	0	59	74	301	58	0	433	11	0	3	1	15	1	207	2	0	210	717
08:45 AM	0	1	50	0	51	99	300	76	0	475	11	0	3	0	14	1	247	8	0	256	796
Total	1	3	193	0	197	284	1094	219	0	1597	47	2	13	1	63	7	818	16	0	841	2698
09:00 AM	1	0	51	0	52	84	309	63	0	456	9	0	2	0	11	1	264	9	0	274	793
09:15 AM	0	1	49	0	50	70	307	59	1	437	18	0	3	0	21	0	278	4	2	284	792
09:30 AM	1	2	40	1	44	80	286	76	0	442	18	0	4	0	22	0	268	10	0	278	786
09:45 AM	0	3	34	0	37	53	274	62	0	389	13	0	4	0	17	2	239	11	0	252	695
Total	2	6	174	1	183	287	1176	260	1	1724	58	0	13	0	71	3	1049	34	2	1088	3066
Grand Total	4	19	482	1	506	692	2855	637	1	4185	137	3	31	2	173	12	2348	58	2	2420	7284
Apprch %	0.8	3.8	95.3	0.2		16.5	68.2	15.2	0		79.2	1.7	17.9	1.2		0.5	97	2.4	0.1		
Total %	0.1	0.3	6.6	0	6.9	9.5	39.2	8.7	0	57.5	1.9	0	0.4	0	2.4	0.2	32.2	0.8	0	33.2	

	SCOTT DR Southbound				MARSH RD Westbound				SCOTT DR Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	0	1	50	51	**99**	300	**76**	**475**	11	0	3	14	**1**	247	8	256	**796**
09:00 AM	**1**	0	**51**	**52**	84	**309**	63	456	9	0	2	11	1	264	9	274	793
09:15 AM	0	1	49	50	70	307	59	436	**18**	0	3	21	0	**278**	4	**282**	789
09:30 AM	1	**2**	40	43	80	286	76	442	18	0	**4**	**22**	0	268	**10**	278	785
Total Volume	2	4	190	196	333	1202	274	1809	56	0	12	68	2	1057	31	1090	3163
% App. Total	1	2	96.9		18.4	66.4	15.1		82.4	0	17.6		0.2	97	2.8		
PHF	.500	.500	.931	.942	.841	.972	.901	.952	.778	.000	.750	.773	.500	.951	.775	.966	.993

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File Name : 22AM FINAL
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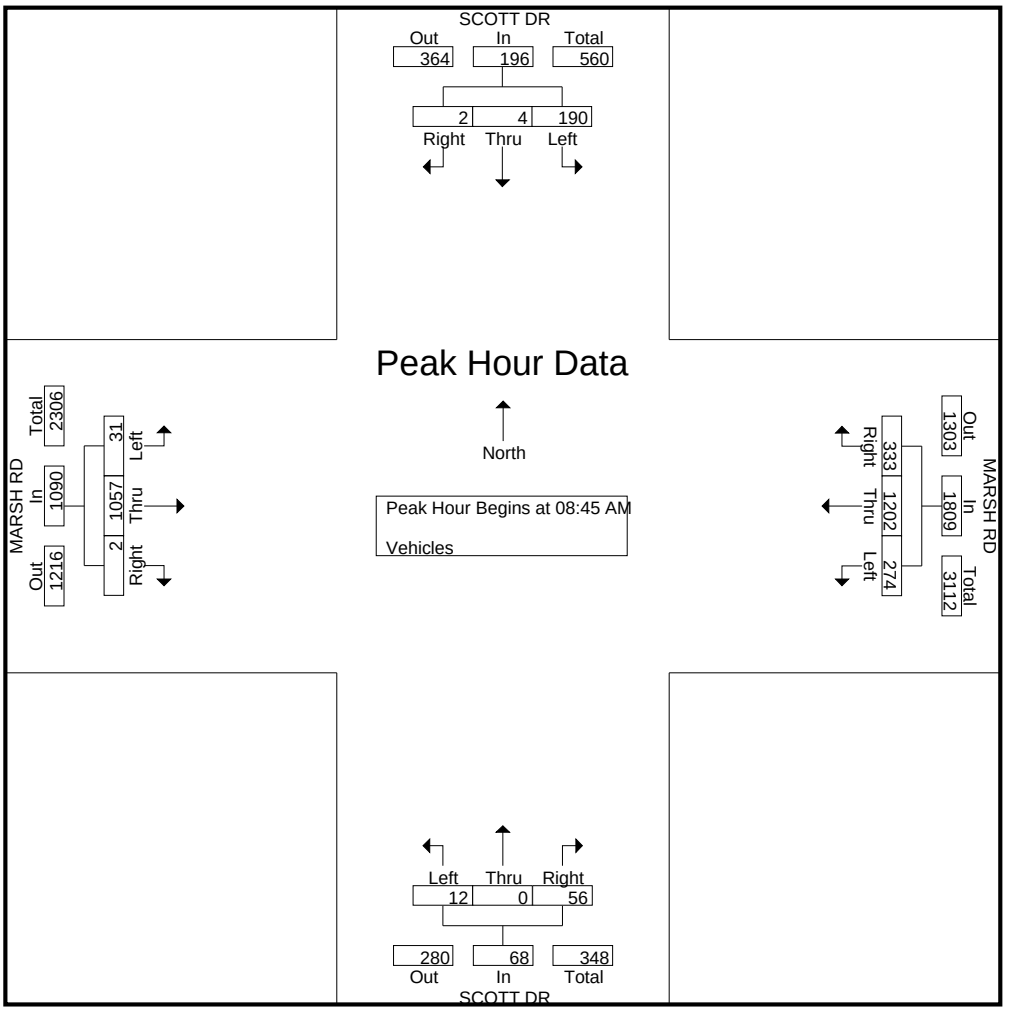

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6280 San Ignacio Ave Suite C
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File Name : 22PM FINAL
Site Code : 00000022
Start Date : 12/1/2022
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Groups Printed- Vehicles

	SCOTT DR Southbound					MARSH RD Westbound					SCOTT DR Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	1	1	40	0	42	56	208	27	0	291	52	1	4	0	57	1	305	11	0	317	707
04:15 PM	0	2	42	1	45	53	220	19	0	292	53	0	2	0	55	2	282	5	0	289	681
04:30 PM	0	0	46	0	46	50	250	11	0	311	51	1	3	0	55	3	351	6	0	360	772
04:45 PM	0	0	54	1	55	52	271	16	0	339	52	0	3	0	55	3	302	8	0	313	762
Total	1	3	182	2	188	211	949	73	0	1233	208	2	12	0	222	9	1240	30	0	1279	2922
05:00 PM	0	1	62	0	63	68	224	11	0	303	65	2	3	0	70	1	319	5	0	325	761
05:15 PM	0	3	45	0	48	49	236	17	0	302	45	1	3	0	49	1	274	12	0	287	686
05:30 PM	0	2	75	0	77	54	230	23	0	307	91	1	3	0	95	1	290	9	0	300	779
05:45 PM	1	2	59	1	63	58	241	12	0	311	55	2	3	0	60	0	254	4	1	259	693
Total	1	8	241	1	251	229	931	63	0	1223	256	6	12	0	274	3	1137	30	1	1171	2919
06:00 PM	1	1	64	0	66	54	249	25	0	328	75	5	6	1	87	1	274	8	0	283	764
06:15 PM	0	0	63	0	63	56	271	13	0	340	36	0	3	0	39	0	330	11	0	341	783
06:30 PM	0	5	50	0	55	49	256	10	0	315	42	2	3	0	47	1	264	7	0	272	689
06:45 PM	0	0	27	0	27	39	236	14	0	289	38	3	2	0	43	1	287	4	2	294	653
Total	1	6	204	0	211	198	1012	62	0	1272	191	10	14	1	216	3	1155	30	2	1190	2889
Grand Total	3	17	627	3	650	638	2892	198	0	3728	655	18	38	1	712	15	3532	90	3	3640	8730
Apprch %	0.5	2.6	96.5	0.5		17.1	77.6	5.3	0		92	2.5	5.3	0.1		0.4	97	2.5	0.1		
Total %	0	0.2	7.2	0	7.4	7.3	33.1	2.3	0	42.7	7.5	0.2	0.4	0	8.2	0.2	40.5	1	0	41.7	

	SCOTT DR Southbound				MARSH RD Westbound				SCOTT DR Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:30 PM																	
05:30 PM	0	**2**	**75**	**77**	54	230	23	307	**91**	1	3	**95**	**1**	290	9	300	779
05:45 PM	**1**	2	59	62	**58**	241	12	311	55	2	3	60	0	254	4	258	691
06:00 PM	1	1	64	66	54	249	**25**	328	75	**5**	**6**	86	1	274	8	283	763
06:15 PM	0	0	63	63	56	**271**	13	**340**	36	0	3	39	0	**330**	**11**	**341**	**783**
Total Volume	2	5	261	268	222	991	73	1286	257	8	15	280	2	1148	32	1182	3016
% App. Total	0.7	1.9	97.4		17.3	77.1	5.7		91.8	2.9	5.4		0.2	97.1	2.7		
PHF	.500	.625	.870	.870	.957	.914	.730	.946	.706	.400	.625	.737	.500	.870	.727	.867	.963

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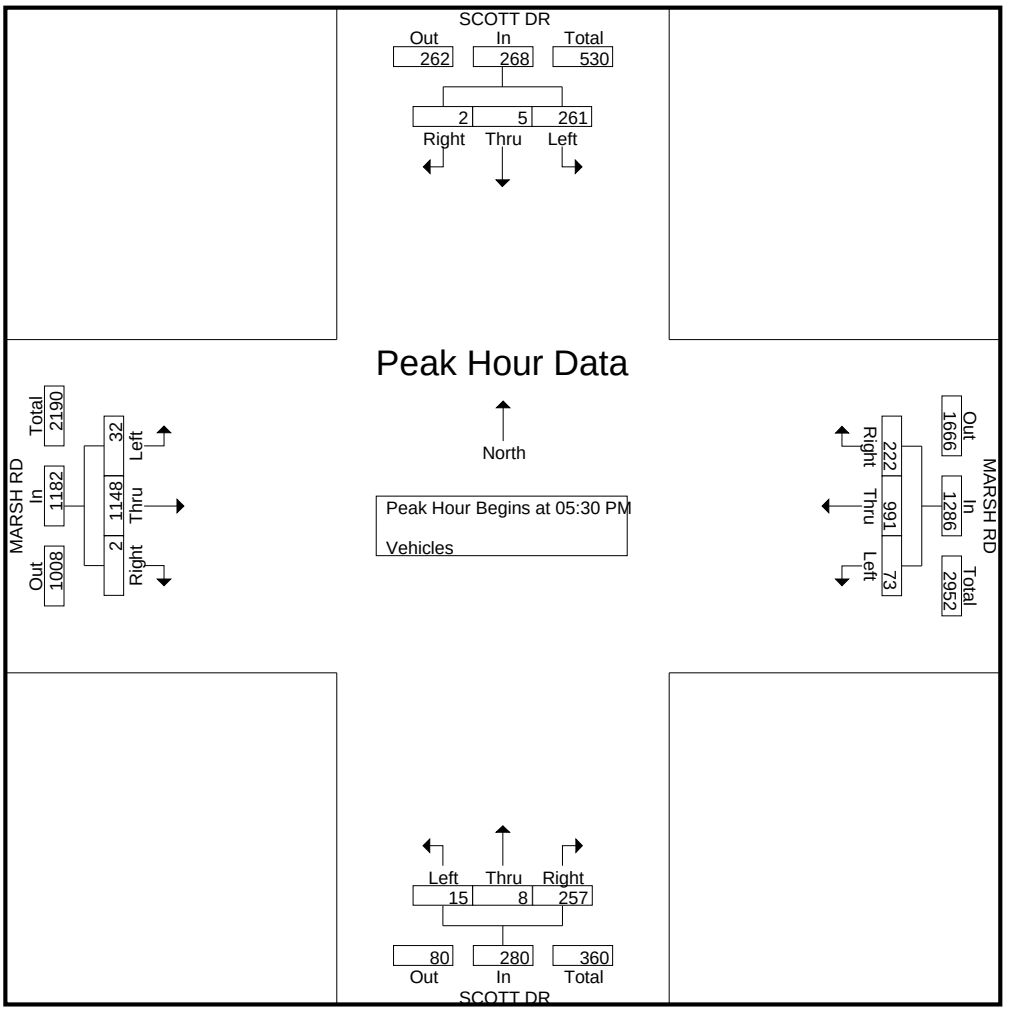

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File Name : 21AM FINAL
Site Code : 00000021
Start Date : 12/1/2022
Page No : 1

Groups Printed- Vehicles

	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	14	4	75	0	93	81	162	5	0	248	6	1	1	0	8	7	103	9	2	121	470
07:15 AM	19	6	95	0	120	98	180	5	0	283	2	5	5	0	12	5	96	17	0	118	533
07:30 AM	35	7	110	0	152	91	201	10	0	302	8	5	9	1	23	9	91	13	0	113	590
07:45 AM	46	4	112	0	162	98	228	10	0	336	3	1	4	0	8	14	131	21	0	166	672
Total	114	21	392	0	527	368	771	30	0	1169	19	12	19	1	51	35	421	60	2	518	2265
08:00 AM	43	2	110	0	155	110	213	8	0	331	8	4	4	1	17	12	152	27	0	191	694
08:15 AM	36	4	103	0	143	103	192	2	0	297	4	5	5	0	14	17	188	31	0	236	690
08:30 AM	27	9	105	1	142	85	214	6	0	305	6	3	6	0	15	15	172	32	0	219	681
08:45 AM	18	11	73	0	102	70	179	11	0	260	7	4	14	0	25	16	163	30	0	209	596
Total	124	26	391	1	542	368	798	27	0	1193	25	16	29	1	71	60	675	120	0	855	2661
09:00 AM	35	6	57	0	98	63	158	6	0	227	2	2	6	0	10	13	116	31	0	160	495
09:15 AM	16	4	70	1	91	72	180	5	0	257	4	6	7	0	17	10	128	20	0	158	523
09:30 AM	11	5	55	1	72	52	150	5	0	207	5	2	9	2	18	3	154	23	1	181	478
09:45 AM	22	1	51	0	74	47	148	3	0	198	2	2	8	0	12	10	95	17	0	122	406
Total	84	16	233	2	335	234	636	19	0	889	13	12	30	2	57	36	493	91	1	621	1902
Grand Total	322	63	1016	3	1404	970	2205	76	0	3251	57	40	78	4	179	131	1589	271	3	1994	6828
Apprch %	22.9	4.5	72.4	0.2		29.8	67.8	2.3	0		31.8	22.3	43.6	2.2		6.6	79.7	13.6	0.2		
Total %	4.7	0.9	14.9	0	20.6	14.2	32.3	1.1	0	47.6	0.8	0.6	1.1	0.1	2.6	1.9	23.3	4	0	29.2	

	FLORENCE ST Southbound				MARSH RD Westbound				BOHANNON DR Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**46**	4	**112**	**162**	98	**228**	**10**	**336**	3	1	4	8	14	131	21	166	672
08:00 AM	43	2	110	155	**110**	213	8	331	**8**	4	4	**16**	12	152	27	191	**693**
08:15 AM	36	4	103	143	103	192	2	297	4	**5**	5	14	**17**	**188**	31	**236**	690
08:30 AM	27	**9**	105	141	85	214	6	305	6	3	**6**	15	15	172	**32**	219	680
Total Volume	152	19	430	601	396	847	26	1269	21	13	19	53	58	643	111	812	2735
% App. Total	25.3	3.2	71.5		31.2	66.7	2		39.6	24.5	35.8		7.1	79.2	13.7		
PHF	.826	.528	.960	.927	.900	.929	.650	.944	.656	.650	.792	.828	.853	.855	.867	.860	.987

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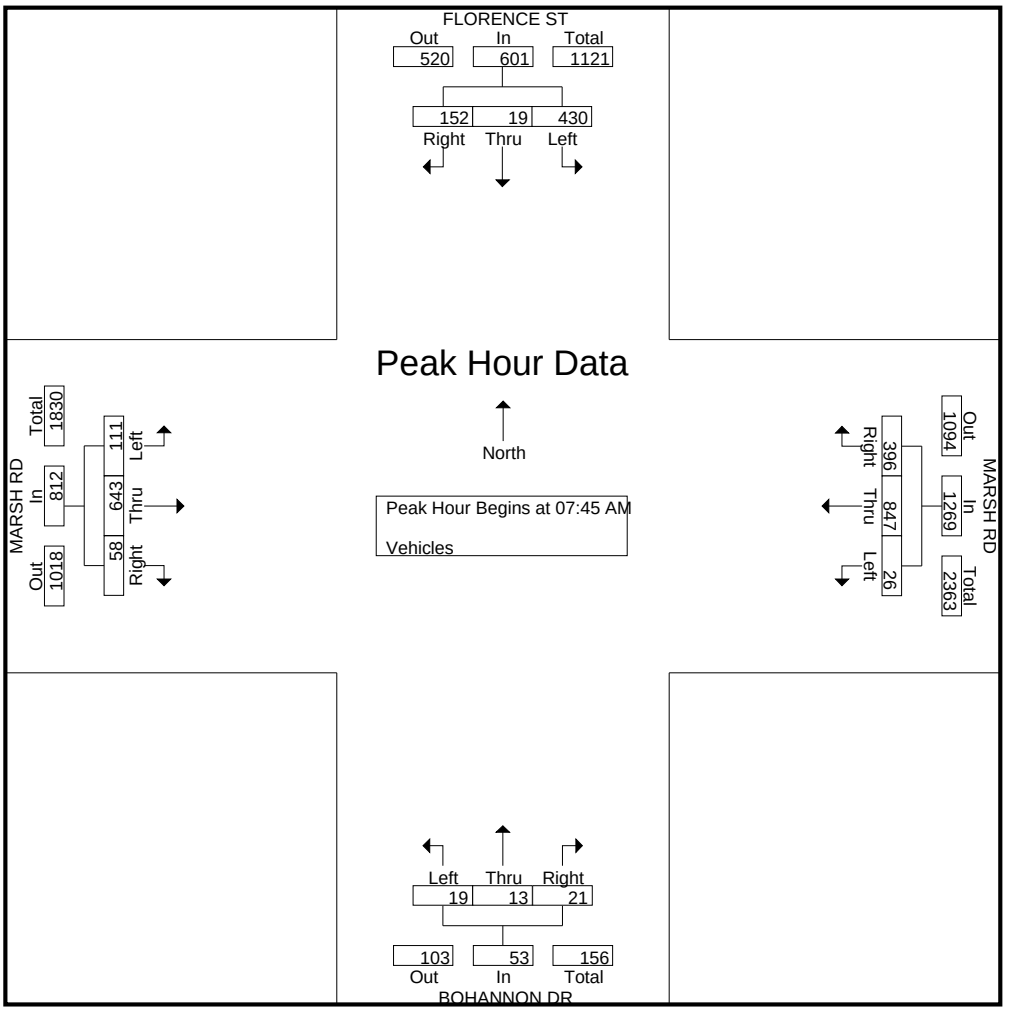

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File Name : 21PM FINAL
Site Code : 00000021
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Groups Printed- Vehicles

	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	23	3	114	0	140	94	159	2	0	255	8	9	13	0	30	14	199	34	0	247	672
04:15 PM	29	4	106	0	139	77	167	4	0	248	8	3	12	0	23	12	178	39	0	229	639
04:30 PM	15	2	95	1	113	75	167	2	1	245	12	7	15	0	34	7	199	23	0	229	621
04:45 PM	34	3	96	1	134	99	152	4	2	257	9	9	17	0	35	16	145	39	3	203	629
Total	101	12	411	2	526	345	645	12	3	1005	37	28	57	0	122	49	721	135	3	908	2561
05:00 PM	23	3	118	0	144	87	169	7	0	263	10	14	23	0	47	3	173	32	0	208	662
05:15 PM	29	1	120	0	150	98	202	3	0	303	14	5	14	0	33	6	183	39	0	228	714
05:30 PM	18	2	102	0	122	95	174	5	0	274	5	3	11	1	20	3	152	34	0	189	605
05:45 PM	19	2	102	0	123	83	158	3	1	245	9	4	10	0	23	15	174	44	0	233	624
Total	89	8	442	0	539	363	703	18	1	1085	38	26	58	1	123	27	682	149	0	858	2605
06:00 PM	21	5	80	1	107	79	151	1	0	231	12	4	13	0	29	3	155	34	6	198	565
06:15 PM	20	2	72	2	96	68	145	4	0	217	4	0	8	0	12	4	168	24	1	197	522
06:30 PM	28	3	83	0	114	75	139	1	0	215	5	3	3	0	11	2	132	30	1	165	505
06:45 PM	23	1	64	0	88	68	101	1	0	170	4	1	5	0	10	4	138	21	0	163	431
Total	92	11	299	3	405	290	536	7	0	833	25	8	29	0	62	13	593	109	8	723	2023
Grand Total	282	31	1152	5	1470	998	1884	37	4	2923	100	62	144	1	307	89	1996	393	11	2489	7189
Apprch %	19.2	2.1	78.4	0.3		34.1	64.5	1.3	0.1		32.6	20.2	46.9	0.3		3.6	80.2	15.8	0.4		
Total %	3.9	0.4	16	0.1	20.4	13.9	26.2	0.5	0.1	40.7	1.4	0.9	2	0	4.3	1.2	27.8	5.5	0.2	34.6	

	FLORENCE ST Southbound				MARSH RD Westbound				BOHANNON DR Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	15	2	95	112	75	167	2	244	12	7	15	34	7	**199**	23	**229**	619
04:45 PM	**34**	**3**	96	133	**99**	152	4	255	9	9	17	35	**16**	145	**39**	200	623
05:00 PM	23	3	118	144	87	169	**7**	263	10	**14**	**23**	**47**	3	173	32	208	662
05:15 PM	29	1	**120**	**150**	98	**202**	3	**303**	**14**	5	14	33	6	183	39	228	**714**
Total Volume	101	9	429	539	359	690	16	1065	45	35	69	149	32	700	133	865	2618
% App. Total	18.7	1.7	79.6		33.7	64.8	1.5		30.2	23.5	46.3		3.7	80.9	15.4		
PHF	.743	.750	.894	.898	.907	.854	.571	.879	.804	.625	.750	.793	.500	.879	.853	.944	.917

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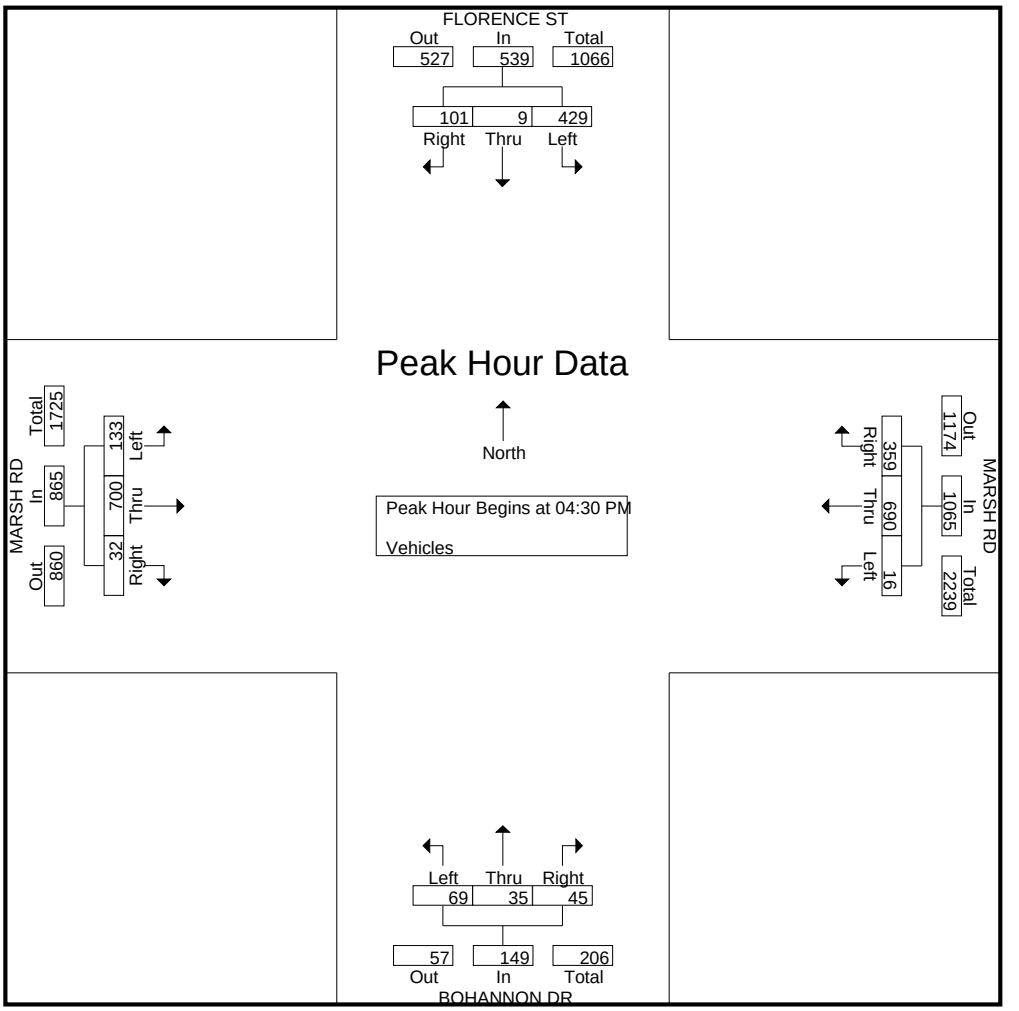

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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File Name : 20AM FINAL
Site Code : 00000020
Start Date : 12/1/2022
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Groups Printed- Vehicles

	BAY RD Southbound					MARSH RD Westbound					BAY RD Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	3	12	0	15	4	148	18	0	170	9	0	4	0	13	3	95	0	0	98	296
07:15 AM	0	2	17	0	19	7	170	24	0	201	15	0	9	0	24	7	84	0	0	91	335
07:30 AM	2	6	27	0	35	6	219	33	1	259	22	2	16	0	40	7	89	0	0	96	430
07:45 AM	0	7	27	0	34	17	221	48	2	288	25	4	20	0	49	8	125	0	0	133	504
Total	2	18	83	0	103	34	758	123	3	918	71	6	49	0	126	25	393	0	0	418	1565
08:00 AM	0	10	16	0	26	12	197	51	0	260	42	6	10	0	58	18	138	0	0	156	500
08:15 AM	0	9	22	1	32	21	182	41	2	246	41	6	8	0	55	19	151	0	0	170	503
08:30 AM	1	13	17	1	32	12	212	33	0	257	47	3	7	0	57	27	167	0	0	194	540
08:45 AM	0	11	14	0	25	11	157	38	0	206	31	5	12	0	48	18	152	2	0	172	451
Total	1	43	69	2	115	56	748	163	2	969	161	20	37	0	218	82	608	2	0	692	1994
09:00 AM	2	7	7	0	16	11	159	36	0	206	30	2	9	0	41	4	117	0	0	121	384
09:15 AM	0	3	15	0	18	8	170	28	0	206	21	1	9	0	31	9	126	1	0	136	391
09:30 AM	0	1	12	1	14	6	157	14	2	179	21	1	12	0	34	5	130	0	0	135	362
09:45 AM	0	0	9	0	9	8	159	20	0	187	13	1	7	0	21	7	101	0	0	108	325
Total	2	11	43	1	57	33	645	98	2	778	85	5	37	0	127	25	474	1	0	500	1462
Grand Total	5	72	195	3	275	123	2151	384	7	2665	317	31	123	0	471	132	1475	3	0	1610	5021
Apprch %	1.8	26.2	70.9	1.1		4.6	80.7	14.4	0.3		67.3	6.6	26.1	0		8.2	91.6	0.2	0		
Total %	0.1	1.4	3.9	0.1	5.5	2.4	42.8	7.6	0.1	53.1	6.3	0.6	2.4	0	9.4	2.6	29.4	0.1	0	32.1	

	BAY RD Southbound				MARSH RD Westbound				BAY RD Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	7	**27**	**34**	17	**221**	48	**286**	25	4	**20**	49	8	125	0	133	502
08:00 AM	0	10	16	26	12	197	**51**	260	42	**6**	10	**58**	18	138	0	156	500
08:15 AM	0	9	22	31	**21**	182	41	244	41	6	8	55	19	151	0	170	500
08:30 AM	**1**	**13**	17	31	12	212	33	257	**47**	3	7	57	**27**	**167**	0	**194**	**539**
Total Volume	1	39	82	122	62	812	173	1047	155	19	45	219	72	581	0	653	2041
% App. Total	0.8	32	67.2		5.9	77.6	16.5		70.8	8.7	20.5		11	89	0		
PHF	.250	.750	.759	.897	.738	.919	.848	.915	.824	.792	.563	.944	.667	.870	.000	.841	.947

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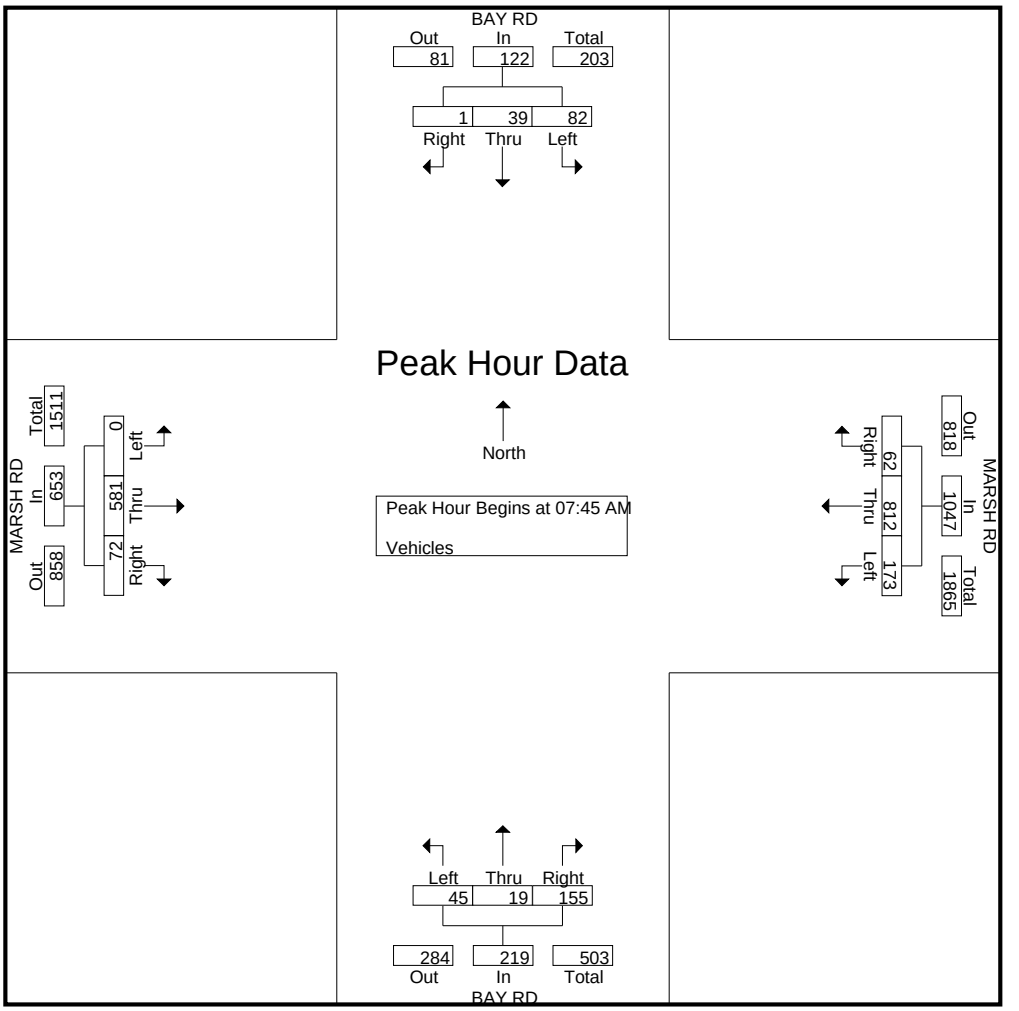

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File Name : 20PM FINAL
Site Code : 00000020
Start Date : 12/1/2022
Page No : 1

Groups Printed- Vehicles

	BAY RD Southbound					MARSH RD Westbound					BAY RD Northbound					MARSH RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	1	5	20	0	26	9	174	38	0	221	30	0	13	0	43	11	188	1	0	200	490
04:15 PM	2	1	15	0	18	6	185	26	1	218	19	3	5	0	27	12	195	0	0	207	470
04:30 PM	0	3	10	0	13	11	155	34	1	201	20	1	12	0	33	9	214	0	0	223	470
04:45 PM	2	5	17	0	24	13	172	25	0	210	31	0	13	0	44	22	173	2	0	197	475
Total	5	14	62	0	81	39	686	123	2	850	100	4	43	0	147	54	770	3	0	827	1905
05:00 PM	0	5	15	0	20	14	171	35	0	220	24	5	6	0	35	11	184	0	0	195	470
05:15 PM	1	4	23	0	28	18	182	35	1	236	26	4	5	0	35	8	172	0	0	180	479
05:30 PM	0	7	12	0	19	13	150	22	0	185	30	8	13	0	51	12	148	0	0	160	415
05:45 PM	2	6	16	0	24	6	168	35	0	209	23	2	4	0	29	15	182	0	0	197	459
Total	3	22	66	0	91	51	671	127	1	850	103	19	28	0	150	46	686	0	0	732	1823
06:00 PM	0	0	10	0	10	13	144	25	0	182	24	4	10	0	38	13	191	0	0	204	434
06:15 PM	3	2	12	1	18	7	149	24	0	180	15	2	13	0	30	7	158	0	0	165	393
06:30 PM	0	3	17	0	20	10	135	25	0	170	14	1	12	0	27	5	130	0	0	135	352
06:45 PM	0	1	6	1	8	8	101	22	0	131	18	1	10	0	29	14	134	1	0	149	317
Total	3	6	45	2	56	38	529	96	0	663	71	8	45	0	124	39	613	1	0	653	1496
Grand Total	11	42	173	2	228	128	1886	346	3	2363	274	31	116	0	421	139	2069	4	0	2212	5224
Apprch %	4.8	18.4	75.9	0.9		5.4	79.8	14.6	0.1		65.1	7.4	27.6	0		6.3	93.5	0.2	0		
Total %	0.2	0.8	3.3	0	4.4	2.5	36.1	6.6	0.1	45.2	5.2	0.6	2.2	0	8.1	2.7	39.6	0.1	0	42.3	

	BAY RD Southbound				MARSH RD Westbound				BAY RD Northbound				MARSH RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	1	**5**	**20**	**26**	9	174	**38**	**221**	30	0	**13**	43	11	188	1	200	**490**
04:15 PM	**2**	1	15	18	6	**185**	26	217	19	**3**	5	27	12	195	0	207	469
04:30 PM	0	3	10	13	11	155	34	200	20	1	12	33	9	**214**	0	**223**	469
04:45 PM	2	5	17	24	**13**	172	25	210	**31**	0	13	**44**	**22**	173	**2**	197	475
Total Volume	5	14	62	81	39	686	123	848	100	4	43	147	54	770	3	827	1903
% App. Total	6.2	17.3	76.5		4.6	80.9	14.5		68	2.7	29.3		6.5	93.1	0.4		
PHF	.625	.700	.775	.779	.750	.927	.809	.959	.806	.333	.827	.835	.614	.900	.375	.927	.971

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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File Name : 20PM FINAL
Site Code : 00000020
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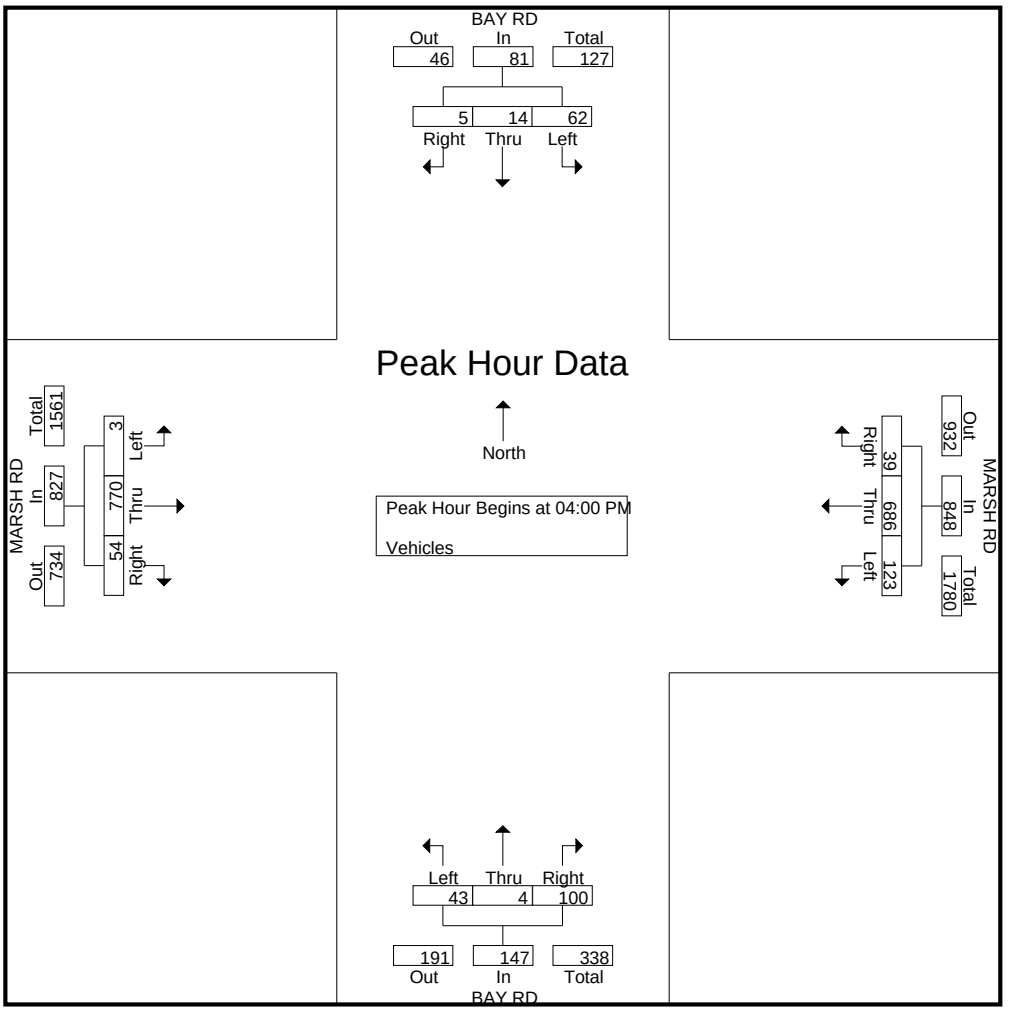
Page No : 2



TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 71AM FINAL
Site Code : 00000071
Start Date : 12/8/2022
Page No : 1

Groups Printed- Vehicles

	BAY RD Southbound						SONOMA AVE Southwestbound						RINGWOOD AVE Westbound						BAY RD Northbound						RINGWOOD AVE Eastbound						
Start Time	Right	Thru	Left	Hard Left	Peds	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	Peds	App. Total	Hard Right	Right	Thru	Left	Peds	App. Total	Right	Bear Right	Thru	Left	Peds	App. Total	Right	Thru	Bear Left	Left	Peds	App. Total	Int. Total
07:00 AM	22	12	1	0	7	42	0	1	2	0	3	6	0	1	0	0	3	4	0	0	10	32	0	42	2	0	2	7	0	11	105
07:15 AM	22	14	0	0	0	36	0	3	1	0	0	4	0	0	3	1	0	4	1	0	15	61	1	78	14	2	0	10	0	26	148
07:30 AM	42	23	1	0	9	75	0	3	0	0	5	8	0	0	5	0	6	11	0	0	7	91	0	98	19	0	0	8	0	27	219
07:45 AM	70	29	1	1	14	115	0	7	0	0	10	17	0	1	22	2	6	31	0	0	8	96	2	106	30	2	0	18	0	50	319
Total	156	78	3	1	30	268	0	14	3	0	18	35	0	2	30	3	15	50	1	0	40	280	3	324	65	4	2	43	0	114	791
08:00 AM	67	32	3	1	12	115	1	16	0	0	5	22	0	0	38	3	4	45	0	0	14	86	1	101	46	3	0	34	0	83	366
08:15 AM	47	41	0	2	8	98	3	5	6	0	5	19	0	1	6	0	1	8	2	0	16	80	2	100	70	7	5	33	0	115	340
08:30 AM	35	45	2	0	3	85	1	5	1	0	6	13	0	1	2	0	8	11	1	0	22	62	0	85	70	3	2	37	0	112	306
08:45 AM	33	57	1	0	3	94	1	4	3	0	4	12	0	0	0	0	4	4	0	0	12	55	3	70	24	0	6	21	0	51	231
Total	182	175	6	3	26	392	6	30	10	0	20	66	0	2	46	3	17	68	3	0	64	283	6	356	210	13	13	125	0	361	1243
09:00 AM	29	28	0	2	4	63	0	6	1	0	6	13	0	1	2	0	2	5	1	1	14	42	2	60	21	0	2	20	0	43	184
09:15 AM	20	28	0	0	2	50	0	2	3	0	2	7	0	0	0	1	1	2	1	0	14	31	0	46	15	4	1	18	0	38	143
09:30 AM	23	16	0	0	3	42	0	2	1	0	2	5	0	0	0	0	2	2	1	0	21	35	0	57	19	1	0	13	0	33	139
09:45 AM	14	9	0	0	0	23	0	3	1	0	3	7	0	1	0	0	2	3	1	0	15	29	0	45	17	1	3	12	0	33	111
Total	86	81	0	2	9	178	0	13	6	0	13	32	0	2	2	1	7	12	4	1	64	137	2	208	72	6	6	63	0	147	577
Grand Total	424	334	9	6	65	838	6	57	19	0	51	133	0	6	78	7	39	130	8	1	168	700	11	888	347	23	21	231	0	622	2611
Apprch %	50.6	39.9	1.1	0.7	7.8		4.5	42.9	14.3	0	38.3		0	4.6	60	5.4	30		0.9	0.1	18.9	78.8	1.2		55.8	3.7	3.4	37.1	0		
Total %	16.2	12.8	0.3	0.2	2.5	32.1	0.2	2.2	0.7	0	2	5.1	0	0.2	3	0.3	1.5	5	0.3	0	6.4	26.8	0.4	34	13.3	0.9	0.8	8.8	0	23.8	

TRAFFIC DATA SERVICE

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File Name : 71AM FINAL
Site Code : 00000071
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Page No : 2

	BAY RD Southbound					SONOMA AVE Southwestbound					RINGWOOD AVE Westbound					BAY RD Northbound					RINGWOOD AVE Eastbound					
Start Time	Right	Thru	Left	Hard Left	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	App. Total	Right	Bear Right	Thru	Left	App. Total	Right	Thru	Bear Left	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:45 AM																										
07:45 AM	**70**	29	1	1	101	0	7	0	0	7	0	**1**	22	2	25	0	0	8	**96**	**104**	30	2	0	18	50	287
08:00 AM	67	32	**3**	1	**103**	1	**16**	0	0	**17**	0	0	**38**	**3**	**41**	0	0	14	86	100	46	3	0	34	83	**344**
08:15 AM	47	41	0	**2**	90	**3**	5	**6**	0	14	0	1	6	0	7	**2**	0	16	80	98	**70**	**7**	**5**	33	**115**	324
08:30 AM	35	**45**	2	0	82	1	5	1	0	7	0	1	2	0	3	1	0	**22**	62	85	70	3	2	**37**	112	289
Total Volume	219	147	6	4	376	5	33	7	0	45	0	3	68	5	76	3	0	60	324	387	216	15	7	122	360	1244
% App. Total	58.2	39.1	1.6	1.1		11.1	73.3	15.6	0		0	3.9	89.5	6.6		0.8	0	15.5	83.7		60	4.2	1.9	33.9		
PHF	.782	.817	.500	.500	.913	.417	.516	.292	.000	.662	.000	.750	.447	.417	.463	.375	.000	.682	.844	.930	.771	.536	.350	.824	.783	.904

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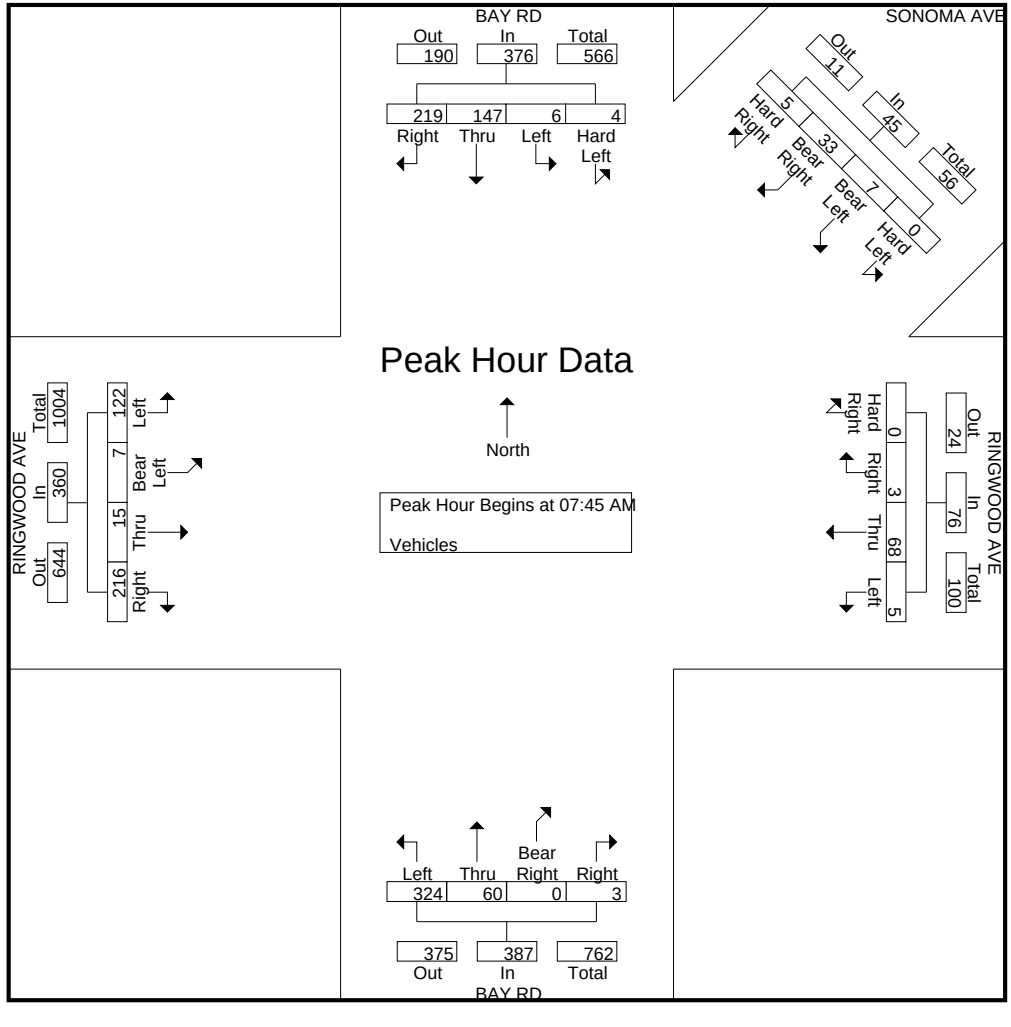

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6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 71PM FINAL
Site Code : 00000071
Start Date : 12/8/2022
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Groups Printed- Vehicles

	BAY RD Southbound						SONOMA AVE Southwestbound						RINGWOOD AVE Westbound						BAY RD Northbound						RINGWOOD AVE Eastbound						
Start Time	Right	Thru	Left	Hard Left	Peds	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	Peds	App. Total	Hard Right	Right	Thru	Left	Peds	App. Total	Right	Bear Right	Thru	Left	Peds	App. Total	Right	Thru	Bear Left	Left	Peds	App. Total	Int. Total
04:00 PM	27	40	1	0	1	69	1	3	2	0	1	7	0	1	2	0	0	3	1	1	14	25	0	41	50	1	7	39	1	98	218
04:15 PM	34	24	1	1	1	61	3	4	1	0	1	9	0	2	0	0	1	3	1	2	18	23	1	45	51	3	4	28	0	86	204
04:30 PM	17	24	0	0	7	48	1	2	3	0	4	10	0	0	1	0	2	3	1	0	15	21	0	37	70	0	5	27	0	102	200
04:45 PM	14	22	0	1	1	38	0	1	2	0	1	4	0	1	1	0	1	3	0	0	16	36	0	52	46	2	11	30	1	90	187
Total	92	110	2	2	10	216	5	10	8	0	7	30	0	4	4	0	4	12	3	3	63	105	1	175	217	6	27	124	2	376	809
05:00 PM	36	28	0	0	2	66	0	3	0	0	0	3	0	0	2	1	0	3	0	1	18	28	1	48	62	4	3	26	0	95	215
05:15 PM	34	14	1	1	0	50	1	2	2	0	0	5	0	0	0	0	0	0	2	1	15	40	1	59	61	3	5	36	1	106	220
05:30 PM	18	15	0	0	1	34	3	3	1	0	0	7	0	0	2	1	0	3	1	1	20	40	0	62	55	6	5	27	0	93	199
05:45 PM	27	13	0	0	0	40	2	7	0	0	0	9	0	0	4	1	0	5	0	2	20	24	0	46	41	4	6	34	0	85	185
Total	115	70	1	1	3	190	6	15	3	0	0	24	0	0	8	3	0	11	3	5	73	132	2	215	219	17	19	123	1	379	819
06:00 PM	16	14	1	0	0	31	1	2	1	1	0	5	0	0	0	0	0	0	0	0	22	11	0	33	24	1	4	15	0	44	113
06:15 PM	26	10	1	0	0	37	0	1	1	0	1	3	0	0	2	2	1	5	0	1	13	21	0	35	24	4	3	22	0	53	133
06:30 PM	19	17	0	0	0	36	0	1	0	0	0	1	0	1	1	1	0	3	0	0	16	13	0	29	25	3	4	23	0	55	124
06:45 PM	21	13	0	0	0	34	1	4	0	0	0	5	0	2	1	0	0	3	1	1	14	20	0	36	26	1	0	34	0	61	139
Total	82	54	2	0	0	138	2	8	2	1	1	14	0	3	4	3	1	11	1	2	65	65	0	133	99	9	11	94	0	213	509
Grand Total	289	234	5	3	13	544	13	33	13	1	8	68	0	7	16	6	5	34	7	10	201	302	3	523	535	32	57	341	3	968	2137
Apprch %	53.1	43	0.9	0.6	2.4		19.1	48.5	19.1	1.5	11.8		0	20.6	47.1	17.6	14.7		1.3	1.9	38.4	57.7	0.6		55.3	3.3	5.9	35.2	0.3		
Total %	13.5	10.9	0.2	0.1	0.6	25.5	0.6	1.5	0.6	0	0.4	3.2	0	0.3	0.7	0.3	0.2	1.6	0.3	0.5	9.4	14.1	0.1	24.5	25	1.5	2.7	16	0.1	45.3	

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File Name : 71PM FINAL
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	BAY RD Southbound					SONOMA AVE Southwestbound					RINGWOOD AVE Westbound					BAY RD Northbound					RINGWOOD AVE Eastbound					
Start Time	Right	Thru	Left	Hard Left	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	App. Total	Right	Bear Right	Thru	Left	App. Total	Right	Thru	Bear Left	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	**36**	**28**	0	0	**64**	0	3	0	0	3	0	0	2	**1**	3	0	1	18	28	47	**62**	4	3	26	95	212
05:15 PM	34	14	**1**	**1**	50	1	2	**2**	0	5	0	0	0	0	0	**2**	1	15	**40**	58	61	3	5	**36**	**105**	**218**
05:30 PM	18	15	0	0	33	**3**	3	1	0	7	0	0	2	1	3	1	1	**20**	40	**62**	55	**6**	5	27	93	198
05:45 PM	27	13	0	0	40	2	**7**	0	0	**9**	0	0	**4**	1	**5**	0	**2**	20	24	46	41	4	**6**	34	85	185
Total Volume	115	70	1	1	187	6	15	3	0	24	0	0	8	3	11	3	5	73	132	213	219	17	19	123	378	813
% App. Total	61.5	37.4	0.5	0.5		25	62.5	12.5	0		0	0	72.7	27.3		1.4	2.3	34.3	62		57.9	4.5	5	32.5		
PHF	.799	.625	.250	.250	.730	.500	.536	.375	.000	.667	.000	.000	.500	.750	.550	.375	.625	.913	.825	.859	.883	.708	.792	.854	.900	.932

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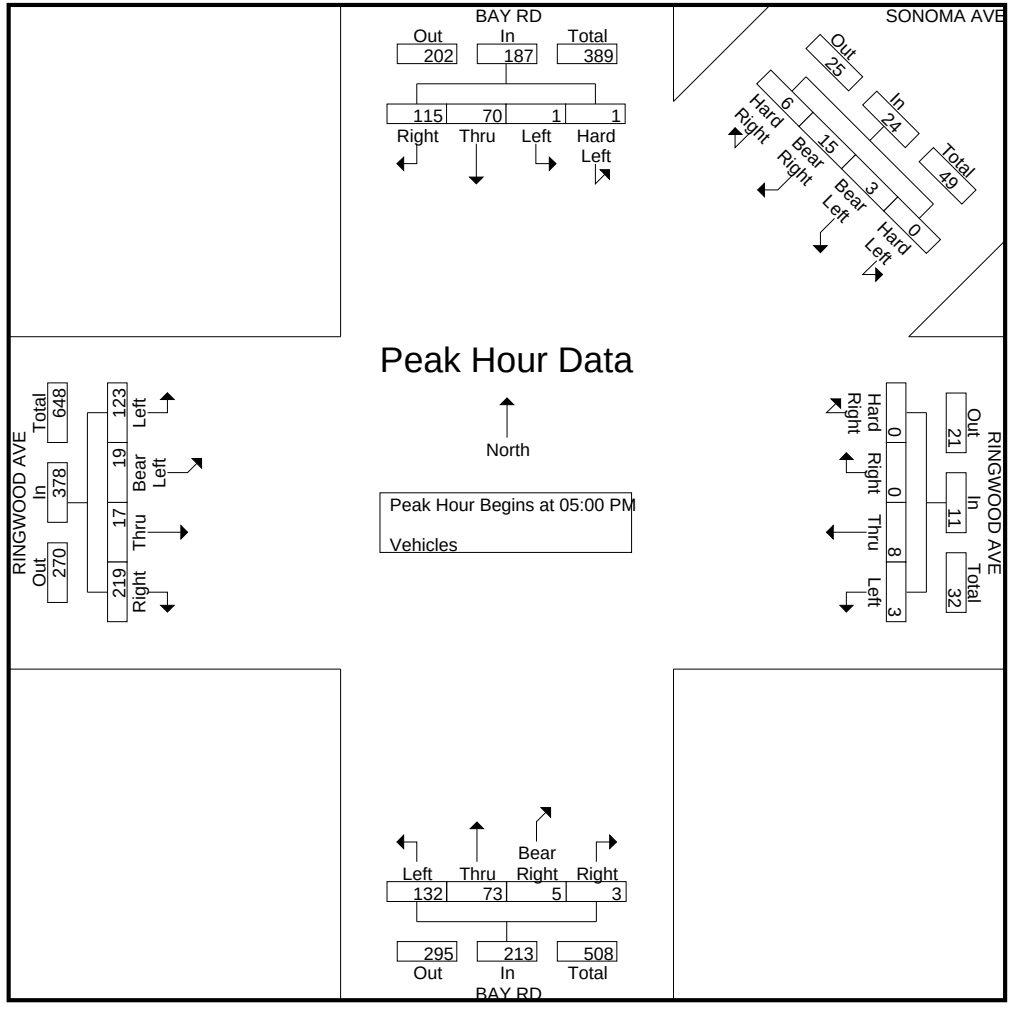

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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tdsbay@cs.com

File Name : 72AM FINAL
Site Code : 00000072
Start Date : 11/10/2022
Page No : 1

Groups Printed- Vehicles

	US-101 NB ON-RAMP Southbound					WILLOW RD Westbound					US-101 NB RAMPS Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	93	307	0	0	400	71	0	91	0	162	54	77	0	0	131	693
07:15 AM	0	0	0	0	0	99	305	0	0	404	104	0	102	1	207	48	108	0	0	156	767
07:30 AM	0	0	0	0	0	143	339	0	0	482	102	0	115	4	221	62	142	0	0	204	907
07:45 AM	0	0	0	0	0	122	352	0	0	474	130	0	109	6	245	79	207	0	0	286	1005
Total	0	0	0	0	0	457	1303	0	0	1760	407	0	417	11	835	243	534	0	0	777	3372
08:00 AM	0	0	0	1	1	100	368	0	0	468	133	0	111	4	248	56	194	0	0	250	967
08:15 AM	0	0	0	1	1	106	425	0	0	531	170	0	109	3	282	63	148	0	0	211	1025
08:30 AM	0	0	0	0	0	104	332	0	0	436	173	0	96	2	271	60	167	0	0	227	934
08:45 AM	0	0	0	0	0	74	292	0	0	366	195	0	103	2	300	68	205	0	0	273	939
Total	0	0	0	2	2	384	1417	0	0	1801	671	0	419	11	1101	247	714	0	0	961	3865
09:00 AM	0	0	0	0	0	75	300	0	0	375	163	0	84	1	248	58	140	0	0	198	821
09:15 AM	0	0	0	0	0	69	266	0	0	335	148	0	96	2	246	55	202	0	0	257	838
09:30 AM	0	0	0	1	1	73	254	0	0	327	184	0	72	1	257	63	165	0	0	228	813
09:45 AM	0	0	0	0	0	66	258	0	0	324	140	0	78	1	219	52	133	0	0	185	728
Total	0	0	0	1	1	283	1078	0	0	1361	635	0	330	5	970	228	640	0	0	868	3200
Grand Total	0	0	0	3	3	1124	3798	0	0	4922	1713	0	1166	27	2906	718	1888	0	0	2606	10437
Apprch %	0	0	0	100		22.8	77.2	0	0		58.9	0	40.1	0.9		27.6	72.4	0	0		
Total %	0	0	0	0	0	10.8	36.4	0	0	47.2	16.4	0	11.2	0.3	27.8	6.9	18.1	0	0	25	

	US-101 NB ON-RAMP Southbound				WILLOW RD Westbound				US-101 NB RAMPS Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	**122**	352	0	474	130	0	109	239	**79**	**207**	0	**286**	999
08:00 AM	0	0	0	0	100	368	0	468	133	0	**111**	244	56	194	0	250	962
08:15 AM	0	0	0	0	106	**425**	0	**531**	170	0	109	**279**	63	148	0	211	**1021**
08:30 AM	0	0	0	0	104	332	0	436	**173**	0	96	269	60	167	0	227	932
Total Volume	0	0	0	0	432	1477	0	1909	606	0	425	1031	258	716	0	974	3914
% App. Total	0	0	0		22.6	77.4	0		58.8	0	41.2		26.5	73.5	0		
PHF	.000	.000	.000	.000	.885	.869	.000	.899	.876	.000	.957	.924	.816	.865	.000	.851	.958

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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File Name : 72AM FINAL
Site Code : 00000072
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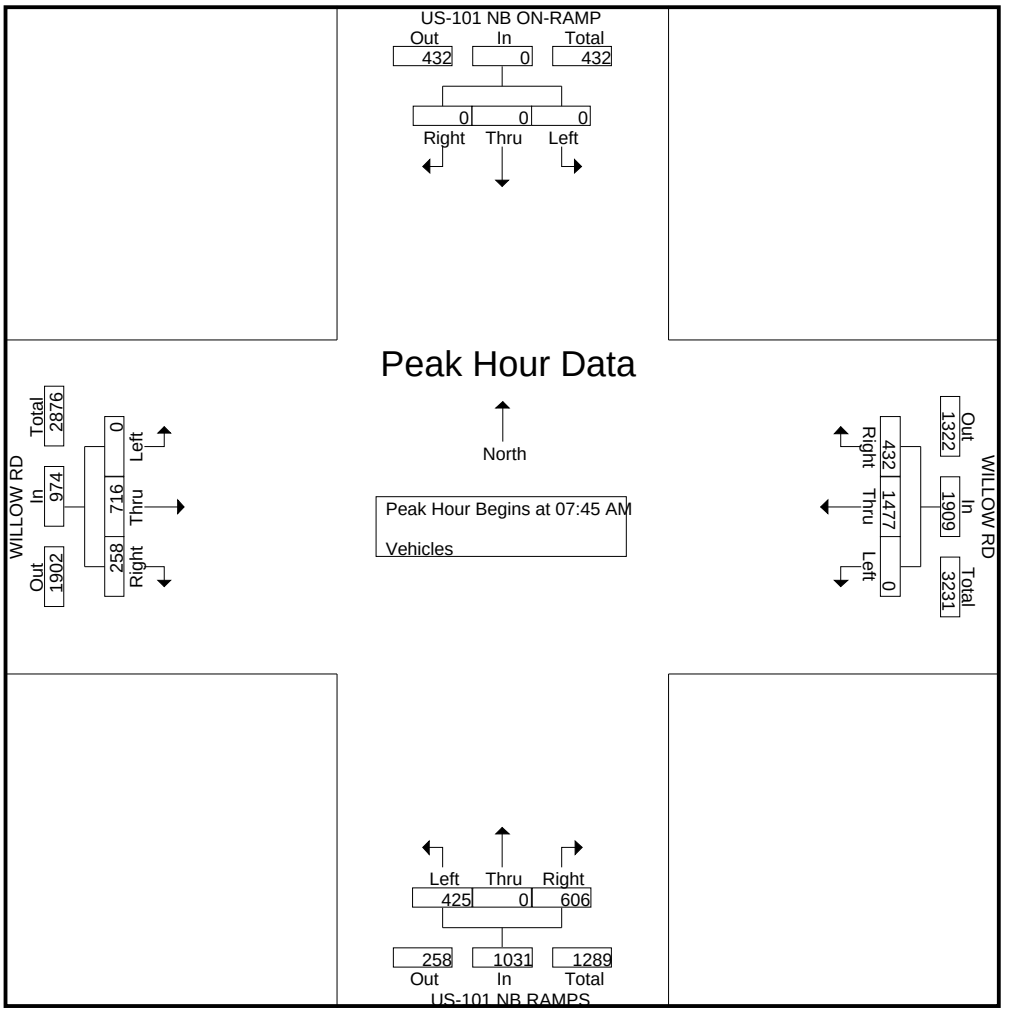

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Groups Printed- Vehicles

	US-101 NB ON-RAMP Southbound					WILLOW RD Westbound					US-101 NB RAMPS Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	72	174	0	0	246	255	0	61	3	319	127	234	0	0	361	926
04:15 PM	0	0	0	1	1	102	189	0	0	291	215	0	68	3	286	96	235	0	0	331	909
04:30 PM	0	0	0	2	2	74	238	0	0	312	202	0	53	1	256	114	231	0	0	345	915
04:45 PM	0	0	0	2	2	107	245	0	0	352	205	0	58	2	265	140	260	0	0	400	1019
Total	0	0	0	5	5	355	846	0	0	1201	877	0	240	9	1126	477	960	0	0	1437	3769
05:00 PM	0	0	0	0	0	98	239	0	0	337	226	0	62	1	289	128	281	0	0	409	1035
05:15 PM	0	0	0	0	0	96	267	0	0	363	167	0	52	2	221	127	296	0	0	423	1007
05:30 PM	0	0	0	0	0	118	261	0	0	379	232	0	82	1	315	172	260	0	0	432	1126
05:45 PM	0	0	0	0	0	86	219	0	0	305	224	0	70	1	295	181	253	0	0	434	1034
Total	0	0	0	0	0	398	986	0	0	1384	849	0	266	5	1120	608	1090	0	0	1698	4202
06:00 PM	0	0	0	0	0	78	204	0	0	282	188	0	52	1	241	57	244	0	0	301	824
06:15 PM	0	0	0	0	0	78	226	0	0	304	208	0	55	0	263	72	245	0	0	317	884
06:30 PM	0	0	0	1	1	57	175	0	0	232	222	0	43	0	265	42	259	0	0	301	799
06:45 PM	0	0	0	0	0	48	168	0	0	216	189	0	40	1	230	48	216	0	0	264	710
Total	0	0	0	1	1	261	773	0	0	1034	807	0	190	2	999	219	964	0	0	1183	3217
Grand Total	0	0	0	6	6	1014	2605	0	0	3619	2533	0	696	16	3245	1304	3014	0	0	4318	11188
Apprch %	0	0	0	100		28	72	0	0		78.1	0	21.4	0.5		30.2	69.8	0	0		
Total %	0	0	0	0.1	0.1	9.1	23.3	0	0	32.3	22.6	0	6.2	0.1	29	11.7	26.9	0	0	38.6	

	US-101 NB ON-RAMP Southbound				WILLOW RD Westbound				US-101 NB RAMPS Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	98	239	0	337	226	0	62	288	128	281	0	409	1034
05:15 PM	0	0	0	0	96	**267**	0	363	167	0	52	219	127	**296**	0	423	1005
05:30 PM	0	0	0	0	**118**	261	0	**379**	**232**	0	**82**	**314**	172	260	0	432	**1125**
05:45 PM	0	0	0	0	86	219	0	305	224	0	70	294	**181**	253	0	**434**	1033
Total Volume	0	0	0	0	398	986	0	1384	849	0	266	1115	608	1090	0	1698	4197
% App. Total	0	0	0		28.8	71.2	0		76.1	0	23.9		35.8	64.2	0		
PHF	.000	.000	.000	.000	.843	.923	.000	.913	.915	.000	.811	.888	.840	.921	.000	.978	.933

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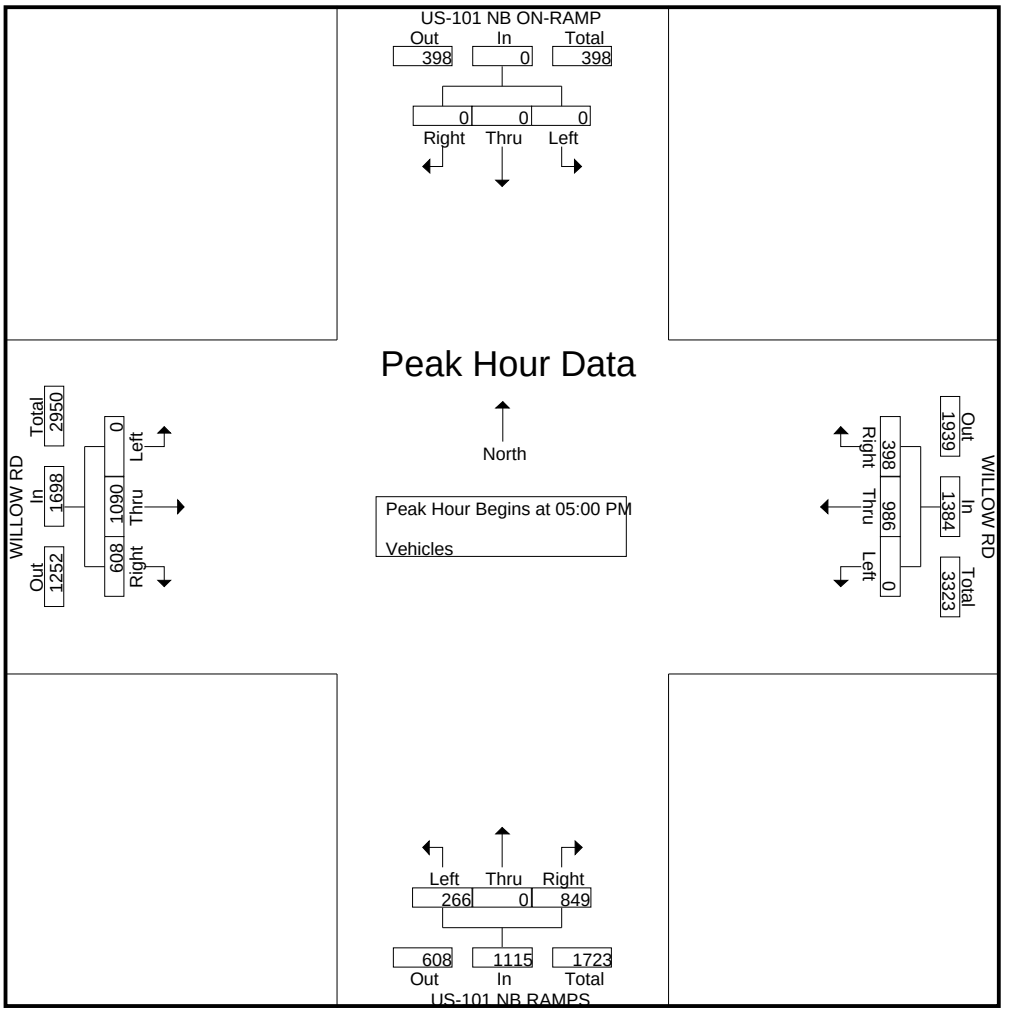

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File Name : 73AM FINAL
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Start Date : 11/10/2022
Page No : 1

Groups Printed- Vehicles

	US-101 SB RAMPS Southbound					WILLOW RD Westbound					US-101 SB ON-RAMP Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	48	0	44	0	92	170	218	0	0	388	0	0	0	1	1	36	97	0	0	133	614
07:15 AM	60	0	47	0	107	157	288	0	0	445	0	0	0	0	0	81	113	0	0	194	746
07:30 AM	74	0	64	0	138	166	342	0	0	508	0	0	0	5	5	103	145	0	0	248	899
07:45 AM	36	0	95	0	131	143	294	0	0	437	0	0	0	7	7	170	199	0	0	369	944
Total	218	0	250	0	468	636	1142	0	0	1778	0	0	0	13	13	390	554	0	0	944	3203
08:00 AM	63	0	74	0	137	92	346	0	0	438	0	0	0	3	3	190	182	0	0	372	950
08:15 AM	60	0	43	0	103	141	435	0	0	576	0	0	0	4	4	183	176	0	0	359	1042
08:30 AM	48	0	30	0	78	185	247	0	0	432	0	0	0	2	2	159	196	0	0	355	867
08:45 AM	94	0	104	0	198	164	248	0	0	412	0	0	0	3	3	146	166	0	0	312	925
Total	265	0	251	0	516	582	1276	0	0	1858	0	0	0	12	12	678	720	0	0	1398	3784
09:00 AM	48	0	67	0	115	187	217	0	0	404	0	0	0	0	0	101	139	0	0	240	759
09:15 AM	69	0	79	0	148	161	186	0	0	347	0	0	0	3	3	106	160	0	0	266	764
09:30 AM	71	0	85	0	156	166	158	0	0	324	0	0	0	0	0	85	126	0	0	211	691
09:45 AM	63	0	70	0	133	138	174	0	0	312	0	0	0	1	1	82	102	0	0	184	630
Total	251	0	301	0	552	652	735	0	0	1387	0	0	0	4	4	374	527	0	0	901	2844
Grand Total	734	0	802	0	1536	1870	3153	0	0	5023	0	0	0	29	29	1442	1801	0	0	3243	9831
Apprch %	47.8	0	52.2	0		37.2	62.8	0	0		0	0	0	100		44.5	55.5	0	0		
Total %	7.5	0	8.2	0	15.6	19	32.1	0	0	51.1	0	0	0	0.3	0.3	14.7	18.3	0	0	33	

	US-101 SB RAMPS Southbound				WILLOW RD Westbound				US-101 SB ON-RAMP Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**74**	0	64	**138**	**166**	342	0	508	0	0	0	0	103	145	0	248	894
07:45 AM	36	0	**95**	131	143	294	0	437	0	0	0	0	170	**199**	0	369	937
08:00 AM	63	0	74	137	92	346	0	438	0	0	0	0	**190**	182	0	**372**	947
08:15 AM	60	0	43	103	141	**435**	0	**576**	0	0	0	0	183	176	0	359	**1038**
Total Volume	233	0	276	509	542	1417	0	1959	0	0	0	0	646	702	0	1348	3816
% App. Total	45.8	0	54.2		27.7	72.3	0		0	0	0		47.9	52.1	0		
PHF	.787	.000	.726	.922	.816	.814	.000	.850	.000	.000	.000	.000	.850	.882	.000	.906	.919

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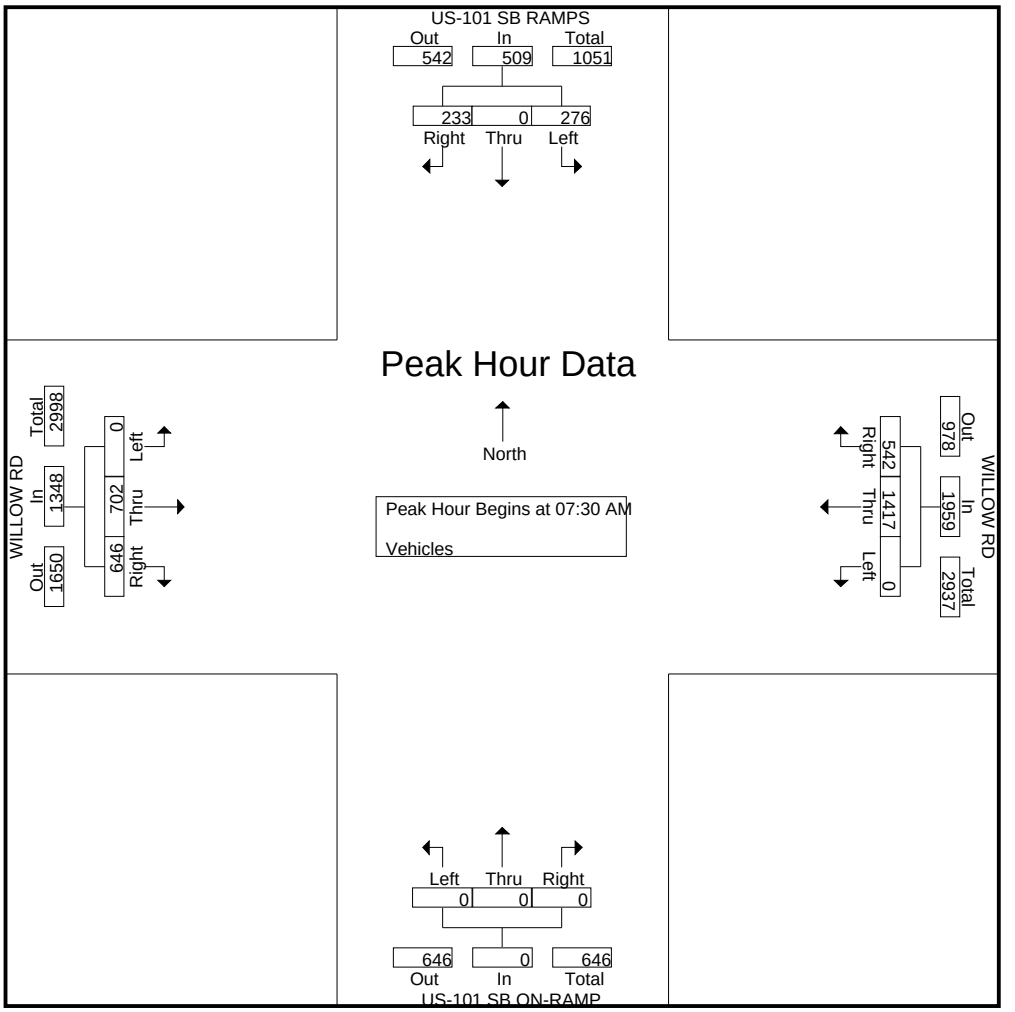

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File Name : 73PM FINAL
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Groups Printed- Vehicles

	US-101 SB RAMPS Southbound					WILLOW RD Westbound					US-101 SB ON-RAMP Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	65	0	93	0	158	102	150	0	0	252	0	0	0	4	4	128	279	0	1	408	822
04:15 PM	57	0	119	1	177	120	168	0	0	288	0	0	0	3	3	107	224	0	0	331	799
04:30 PM	77	0	109	2	188	148	145	0	0	293	0	0	0	0	0	121	251	0	0	372	853
04:45 PM	52	0	140	3	195	140	177	0	0	317	0	0	0	3	3	87	269	0	0	356	871
Total	251	0	461	6	718	510	640	0	0	1150	0	0	0	10	10	443	1023	0	1	1467	3345
05:00 PM	80	0	135	0	215	140	171	0	0	311	0	0	0	0	0	99	279	0	0	378	904
05:15 PM	101	0	140	0	241	159	186	0	0	345	0	0	0	2	2	91	293	0	0	384	972
05:30 PM	100	0	119	0	219	157	217	0	0	374	0	0	0	2	2	87	275	0	0	362	957
05:45 PM	84	0	128	0	212	124	171	0	0	295	0	0	0	2	2	72	272	0	0	344	853
Total	365	0	522	0	887	580	745	0	0	1325	0	0	0	6	6	349	1119	0	0	1468	3686
06:00 PM	45	0	73	0	118	93	195	0	0	288	0	0	0	0	0	69	242	0	0	311	717
06:15 PM	57	0	93	0	150	131	178	0	0	309	0	0	0	0	0	89	235	0	0	324	783
06:30 PM	62	0	101	1	164	109	158	0	0	267	0	0	0	1	1	68	207	0	0	275	707
06:45 PM	59	0	75	0	134	95	154	0	0	249	0	0	0	0	0	83	202	0	0	285	668
Total	223	0	342	1	566	428	685	0	0	1113	0	0	0	1	1	309	886	0	0	1195	2875
Grand Total	839	0	1325	7	2171	1518	2070	0	0	3588	0	0	0	17	17	1101	3028	0	1	4130	9906
Apprch %	38.6	0	61	0.3		42.3	57.7	0	0		0	0	0	100		26.7	73.3	0	0		
Total %	8.5	0	13.4	0.1	21.9	15.3	20.9	0	0	36.2	0	0	0	0.2	0.2	11.1	30.6	0	0	41.7	

	US-101 SB RAMPS Southbound				WILLOW RD Westbound				US-101 SB ON-RAMP Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	52	0	**140**	192	140	177	0	317	0	0	0	0	87	269	0	356	865
05:00 PM	80	0	135	215	140	171	0	311	0	0	0	0	**99**	279	0	378	904
05:15 PM	**101**	0	140	**241**	**159**	186	0	345	0	0	0	0	91	**293**	0	**384**	**970**
05:30 PM	100	0	119	219	157	**217**	0	**374**	0	0	0	0	87	275	0	362	955
Total Volume	333	0	534	867	596	751	0	1347	0	0	0	0	364	1116	0	1480	3694
% App. Total	38.4	0	61.6		44.2	55.8	0		0	0	0		24.6	75.4	0		
PHF	.824	.000	.954	.899	.937	.865	.000	.900	.000	.000	.000	.000	.919	.952	.000	.964	.952

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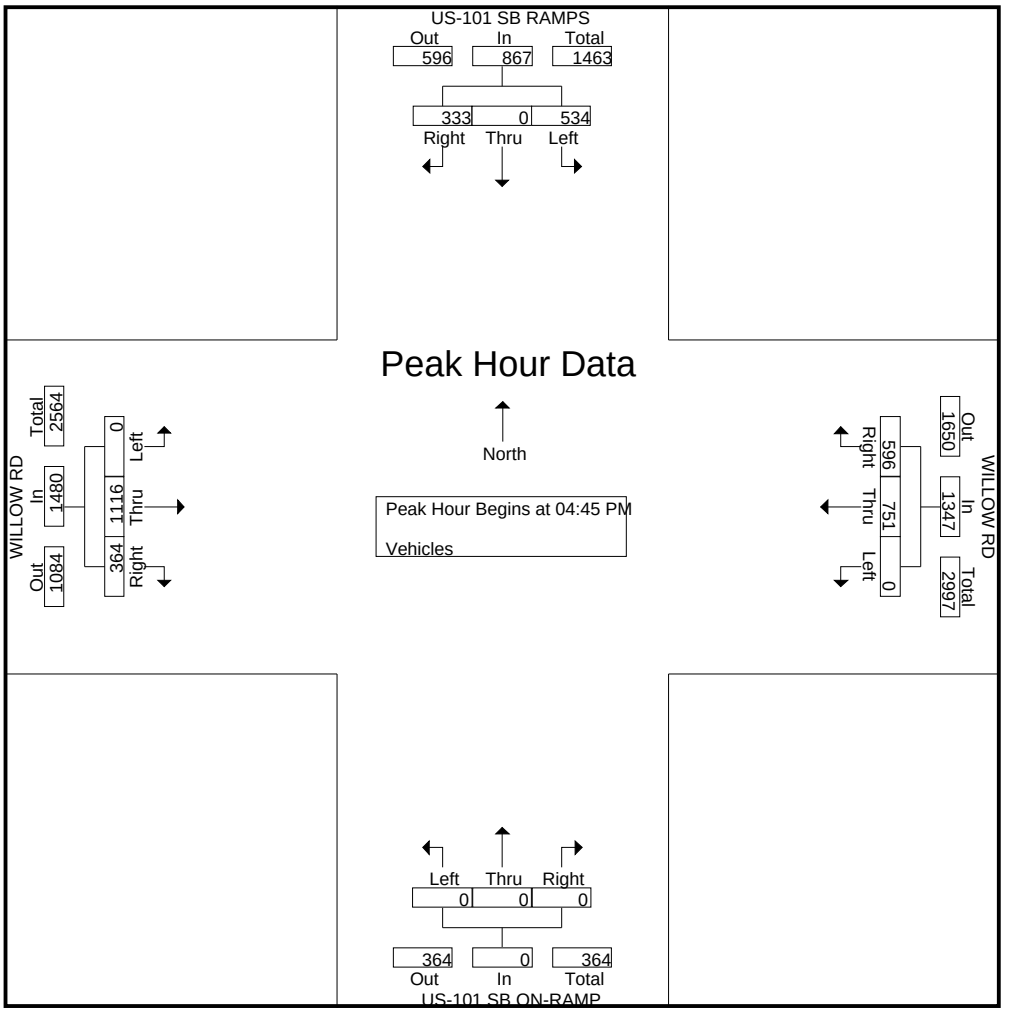

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File Name : 32AM FINAL
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Groups Printed- Vehicles

	BAY RD Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	4	0	13	0	17	57	219	0	0	276	0	0	0	0	0	0	122	5	0	127	420
07:15 AM	7	0	34	1	42	93	254	0	0	347	0	0	0	0	0	0	164	12	0	176	565
07:30 AM	8	0	40	2	50	168	251	0	0	419	0	0	0	0	0	0	223	16	0	239	708
07:45 AM	5	0	71	0	76	145	240	0	0	385	0	0	0	0	0	0	309	18	0	327	788
Total	24	0	158	3	185	463	964	0	0	1427	0	0	0	0	0	0	818	51	0	869	2481
08:00 AM	23	0	74	0	97	168	207	0	0	375	0	0	0	0	0	0	281	27	0	308	780
08:15 AM	20	0	87	0	107	162	266	0	0	428	0	0	0	0	0	0	257	23	0	280	815
08:30 AM	16	0	116	0	132	77	234	0	0	311	0	0	0	0	0	0	245	9	0	254	697
08:45 AM	10	0	62	0	72	88	242	0	0	330	0	0	0	0	0	0	231	14	0	245	647
Total	69	0	339	0	408	495	949	0	0	1444	0	0	0	0	0	0	1014	73	0	1087	2939
09:00 AM	7	0	50	0	57	53	211	0	0	264	0	0	0	0	0	0	187	7	0	194	515
09:15 AM	5	0	62	2	69	62	192	0	0	254	0	0	0	0	0	0	208	8	0	216	539
09:30 AM	7	0	37	1	45	37	219	0	0	256	0	0	0	0	0	0	178	2	0	180	481
09:45 AM	4	0	29	2	35	43	204	0	0	247	0	0	0	0	0	0	155	4	0	159	441
Total	23	0	178	5	206	195	826	0	0	1021	0	0	0	0	0	0	728	21	0	749	1976
Grand Total	116	0	675	8	799	1153	2739	0	0	3892	0	0	0	0	0	0	2560	145	0	2705	7396
Apprch %	14.5	0	84.5	1		29.6	70.4	0	0		0	0	0	0		0	94.6	5.4	0		
Total %	1.6	0	9.1	0.1	10.8	15.6	37	0	0	52.6	0	0	0	0	0	0	34.6	2	0	36.6	

	BAY RD Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	8	0	40	48	**168**	251	0	419	0	0	0	0	0	223	16	239	706
07:45 AM	5	0	71	76	145	240	0	385	0	0	0	0	0	**309**	18	**327**	788
08:00 AM	**23**	0	74	97	168	207	0	375	0	0	0	0	0	281	**27**	308	780
08:15 AM	20	0	**87**	**107**	162	**266**	0	**428**	0	0	0	0	0	257	23	280	**815**
Total Volume	56	0	272	328	643	964	0	1607	0	0	0	0	0	1070	84	1154	3089
% App. Total	17.1	0	82.9		40	60	0		0	0	0		0	92.7	7.3		
PHF	.609	.000	.782	.766	.957	.906	.000	.939	.000	.000	.000	.000	.000	.866	.778	.882	.948

TRAFFIC DATA SERVICE

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File Name : 32AM FINAL
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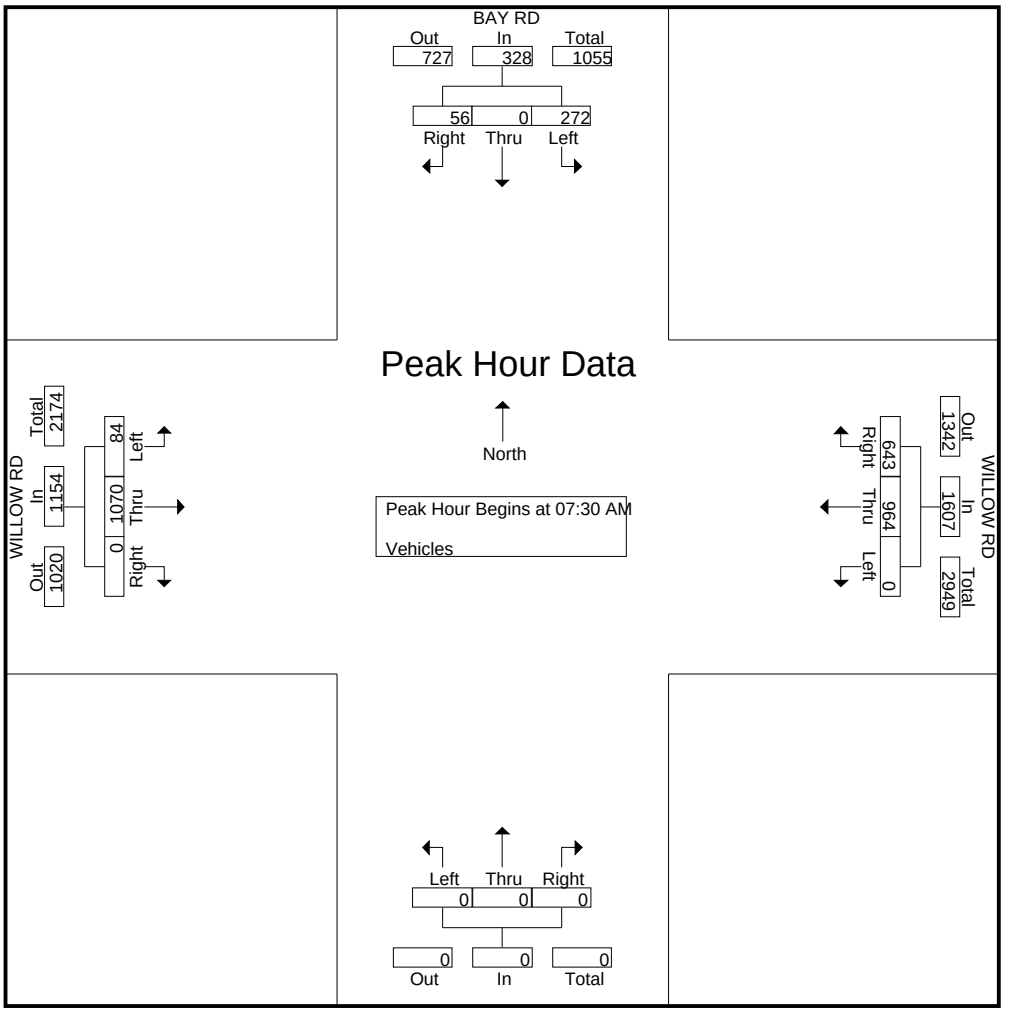

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File Name : 32PM FINAL
Site Code : 00000032
Start Date : 11/10/2022
Page No : 1

Groups Printed- Vehicles

	BAY RD Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	10	0	112	0	122	50	176	0	0	226	0	0	0	0	0	0	323	8	0	331	679
04:15 PM	11	0	87	0	98	51	182	0	0	233	0	0	0	0	0	0	271	12	0	283	614
04:30 PM	13	0	89	5	107	47	184	0	0	231	0	0	0	0	0	0	317	6	0	323	661
04:45 PM	13	0	107	6	126	40	185	0	0	225	0	0	0	0	0	0	287	8	0	295	646
Total	47	0	395	11	453	188	727	0	0	915	0	0	0	0	0	0	1198	34	0	1232	2600
05:00 PM	21	0	70	0	91	38	221	0	0	259	0	0	0	0	0	0	330	11	0	341	691
05:15 PM	13	0	99	5	117	63	222	0	0	285	0	0	0	0	0	0	299	11	0	310	712
05:30 PM	10	0	75	2	87	71	264	0	0	335	0	0	0	0	0	0	321	9	0	330	752
05:45 PM	10	0	48	3	61	56	213	0	0	269	0	0	0	0	0	0	313	8	0	321	651
Total	54	0	292	10	356	228	920	0	0	1148	0	0	0	0	0	0	1263	39	0	1302	2806
06:00 PM	12	0	43	1	56	41	211	0	0	252	0	0	0	0	0	0	275	4	0	279	587
06:15 PM	10	0	33	0	43	38	202	0	0	240	0	0	0	0	0	0	301	0	0	301	584
06:30 PM	11	0	31	1	43	44	177	0	0	221	0	0	0	0	0	0	260	5	1	266	530
06:45 PM	9	0	39	0	48	38	193	0	0	231	0	0	0	0	0	0	263	3	0	266	545
Total	42	0	146	2	190	161	783	0	0	944	0	0	0	0	0	0	1099	12	1	1112	2246
Grand Total	143	0	833	23	999	577	2430	0	0	3007	0	0	0	0	0	0	3560	85	1	3646	7652
Apprch %	14.3	0	83.4	2.3		19.2	80.8	0	0		0	0	0	0		0	97.6	2.3	0		
Total %	1.9	0	10.9	0.3	13.1	7.5	31.8	0	0	39.3	0	0	0	0	0	0	46.5	1.1	0	47.6	

	BAY RD Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**21**	0	70	91	38	221	0	259	0	0	0	0	0	**330**	**11**	**341**	691
05:15 PM	13	0	**99**	**112**	63	222	0	285	0	0	0	0	0	299	11	310	707
05:30 PM	10	0	75	85	**71**	**264**	0	**335**	0	0	0	0	0	321	9	330	**750**
05:45 PM	10	0	48	58	56	213	0	269	0	0	0	0	0	313	8	321	648
Total Volume	54	0	292	346	228	920	0	1148	0	0	0	0	0	1263	39	1302	2796
% App. Total	15.6	0	84.4		19.9	80.1	0		0	0	0		0	97	3		
PHF	.643	.000	.737	.772	.803	.871	.000	.857	.000	.000	.000	.000	.000	.957	.886	.955	.932

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File Name : 32PM FINAL
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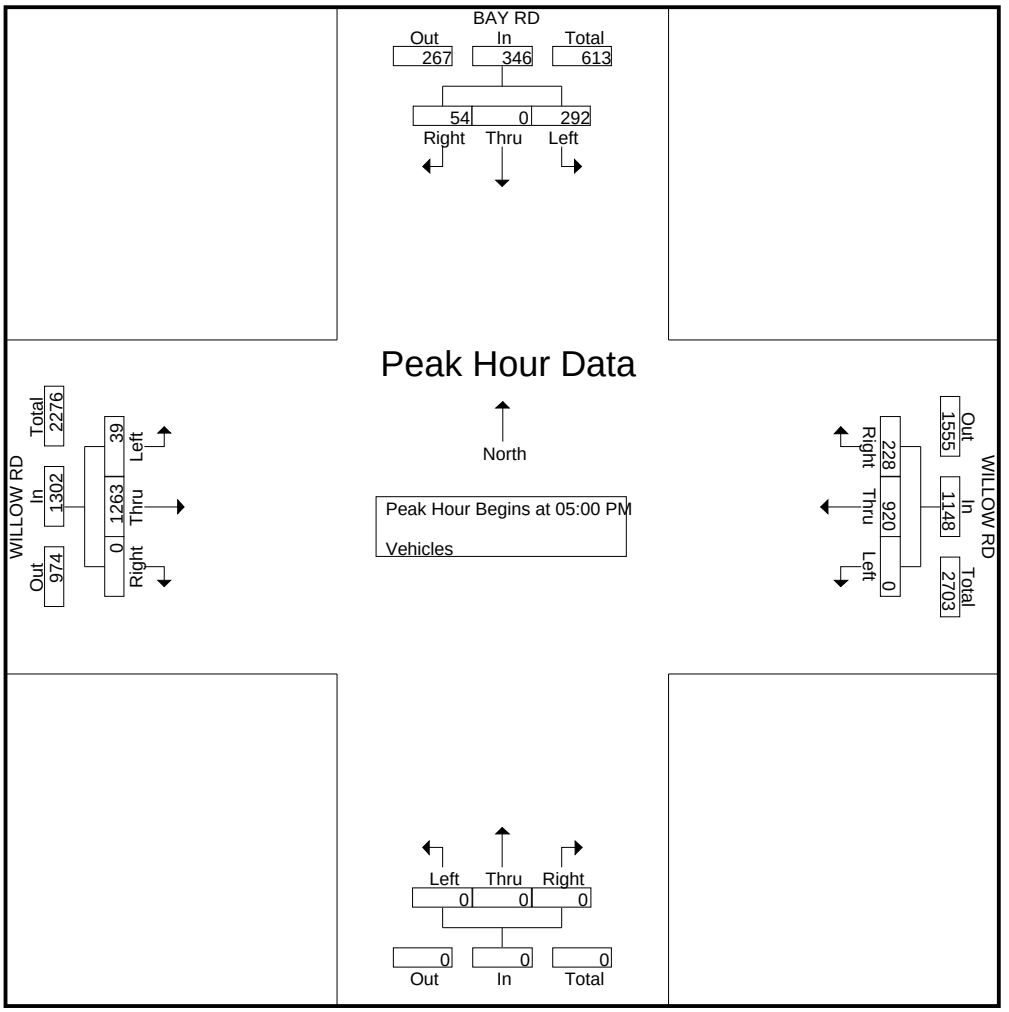
Page No : 2



TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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File Name : 19AM FINAL
Site Code : 00000019
Start Date : 11/10/2022
Page No : 1

Groups Printed- Vehicles

	HOSPITAL PZ Southbound					WILLOW RD Westbound					DURHAM ST Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	2	4	0	7	24	170	5	0	199	4	1	4	1	10	1	86	2	0	89	305
07:15 AM	0	1	11	2	14	22	190	9	2	223	4	0	7	0	11	2	116	2	0	120	368
07:30 AM	1	1	3	0	5	19	201	8	1	229	10	3	24	0	37	1	168	2	6	177	448
07:45 AM	3	0	9	2	14	8	175	10	2	195	22	1	20	4	47	2	220	8	0	230	486
Total	5	4	27	4	40	73	736	32	5	846	40	5	55	5	105	6	590	14	6	616	1607
08:00 AM	7	1	18	0	26	13	171	10	3	197	16	2	23	5	46	4	205	6	8	223	492
08:15 AM	4	0	9	2	15	6	219	8	5	238	18	0	11	1	30	1	176	2	4	183	466
08:30 AM	7	2	6	2	17	17	198	7	1	223	8	0	4	2	14	1	184	1	1	187	441
08:45 AM	2	2	12	1	17	15	193	4	0	212	11	0	5	4	20	1	172	3	1	177	426
Total	20	5	45	5	75	51	781	29	9	870	53	2	43	12	110	7	737	12	14	770	1825
09:00 AM	2	1	10	1	14	15	187	6	2	210	12	0	7	1	20	0	149	3	0	152	396
09:15 AM	2	0	5	7	14	14	166	7	3	190	10	1	3	4	18	2	182	3	2	189	411
09:30 AM	3	1	6	1	11	12	181	4	1	198	7	1	1	1	10	2	142	1	0	145	364
09:45 AM	4	1	13	1	19	12	166	8	1	187	7	0	4	5	16	1	121	3	3	128	350
Total	11	3	34	10	58	53	700	25	7	785	36	2	15	11	64	5	594	10	5	614	1521
Grand Total	36	12	106	19	173	177	2217	86	21	2501	129	9	113	28	279	18	1921	36	25	2000	4953
Apprch %	20.8	6.9	61.3	11		7.1	88.6	3.4	0.8		46.2	3.2	40.5	10		0.9	96.1	1.8	1.2		
Total %	0.7	0.2	2.1	0.4	3.5	3.6	44.8	1.7	0.4	50.5	2.6	0.2	2.3	0.6	5.6	0.4	38.8	0.7	0.5	40.4	

	HOSPITAL PZ Southbound				WILLOW RD Westbound				DURHAM ST Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	**1**	3	5	**19**	201	8	228	10	**3**	**24**	37	1	168	2	171	441
07:45 AM	3	0	9	12	8	175	**10**	193	**22**	1	20	**43**	2	**220**	**8**	**230**	**478**
08:00 AM	**7**	1	**18**	**26**	13	171	10	194	16	2	23	41	**4**	205	6	215	476
08:15 AM	4	0	9	13	6	**219**	8	**233**	18	0	11	29	1	176	2	179	454
Total Volume	15	2	39	56	46	766	36	848	66	6	78	150	8	769	18	795	1849
% App. Total	26.8	3.6	69.6		5.4	90.3	4.2		44	4	52		1	96.7	2.3		
PHF	.536	.500	.542	.538	.605	.874	.900	.910	.750	.500	.813	.872	.500	.874	.563	.864	.967

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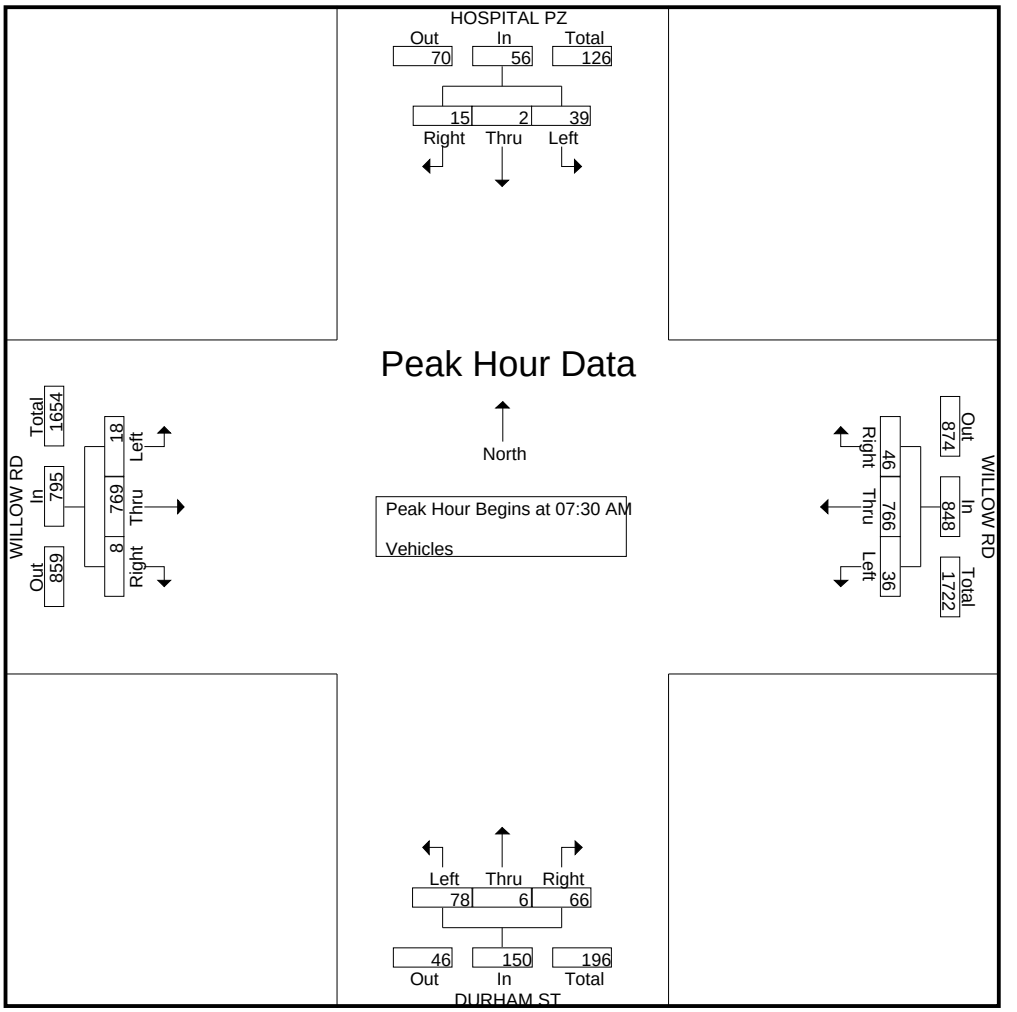

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6280 San Ignacio Ave Suite C
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File Name : 19PM FINAL
Site Code : 00000019
Start Date : 11/10/2022
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Groups Printed- Vehicles

	HOSPITAL PZ Southbound					WILLOW RD Westbound					DURHAM ST Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	7	0	26	0	33	5	138	12	1	156	12	0	8	3	23	2	237	3	2	244	456
04:15 PM	5	0	23	0	28	7	147	13	1	168	11	0	12	0	23	4	220	4	0	228	447
04:30 PM	7	0	25	3	35	5	142	9	7	163	15	0	8	3	26	3	243	2	1	249	473
04:45 PM	4	1	24	1	30	2	148	6	2	158	6	0	9	6	21	2	248	4	4	258	467
Total	23	1	98	4	126	19	575	40	11	645	44	0	37	12	93	11	948	13	7	979	1843
05:00 PM	2	1	8	0	11	5	199	9	2	215	13	1	4	0	18	4	224	2	0	230	474
05:15 PM	4	0	4	1	9	2	170	5	9	186	9	0	8	0	17	4	222	1	1	228	440
05:30 PM	3	1	11	0	15	6	211	10	0	227	13	0	8	1	22	1	234	1	1	237	501
05:45 PM	0	0	13	2	15	3	180	13	1	197	7	1	11	0	19	1	216	1	3	221	452
Total	9	2	36	3	50	16	760	37	12	825	42	2	31	1	76	10	896	5	5	916	1867
06:00 PM	1	0	4	0	5	3	174	18	0	195	8	0	5	0	13	1	255	1	0	257	470
06:15 PM	2	0	9	0	11	2	161	5	0	168	2	0	5	2	9	1	270	1	3	275	463
06:30 PM	2	0	9	0	11	2	152	5	3	162	5	0	2	2	9	4	245	1	1	251	433
06:45 PM	1	0	3	0	4	8	163	7	0	178	6	0	7	4	17	4	230	0	1	235	434
Total	6	0	25	0	31	15	650	35	3	703	21	0	19	8	48	10	1000	3	5	1018	1800
Grand Total	38	3	159	7	207	50	1985	112	26	2173	107	2	87	21	217	31	2844	21	17	2913	5510
Apprch %	18.4	1.4	76.8	3.4		2.3	91.3	5.2	1.2		49.3	0.9	40.1	9.7		1.1	97.6	0.7	0.6		
Total %	0.7	0.1	2.9	0.1	3.8	0.9	36	2	0.5	39.4	1.9	0	1.6	0.4	3.9	0.6	51.6	0.4	0.3	52.9	

	HOSPITAL PZ Southbound				WILLOW RD Westbound				DURHAM ST Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:30 PM																	
05:30 PM	**3**	**1**	11	**15**	**6**	**211**	10	**227**	**13**	0	8	**21**	**1**	234	**1**	236	**499**
05:45 PM	0	0	**13**	13	3	180	13	196	7	**1**	**11**	19	1	216	1	218	446
06:00 PM	1	0	4	5	3	174	**18**	195	8	0	5	13	1	255	1	257	470
06:15 PM	2	0	9	11	2	161	5	168	2	0	5	7	1	**270**	1	**272**	458
Total Volume	6	1	37	44	14	726	46	786	30	1	29	60	4	975	4	983	1873
% App. Total	13.6	2.3	84.1		1.8	92.4	5.9		50	1.7	48.3		0.4	99.2	0.4		
PHF	.500	.250	.712	.733	.583	.860	.639	.866	.577	.250	.659	.714	1.00	.903	1.00	.903	.938

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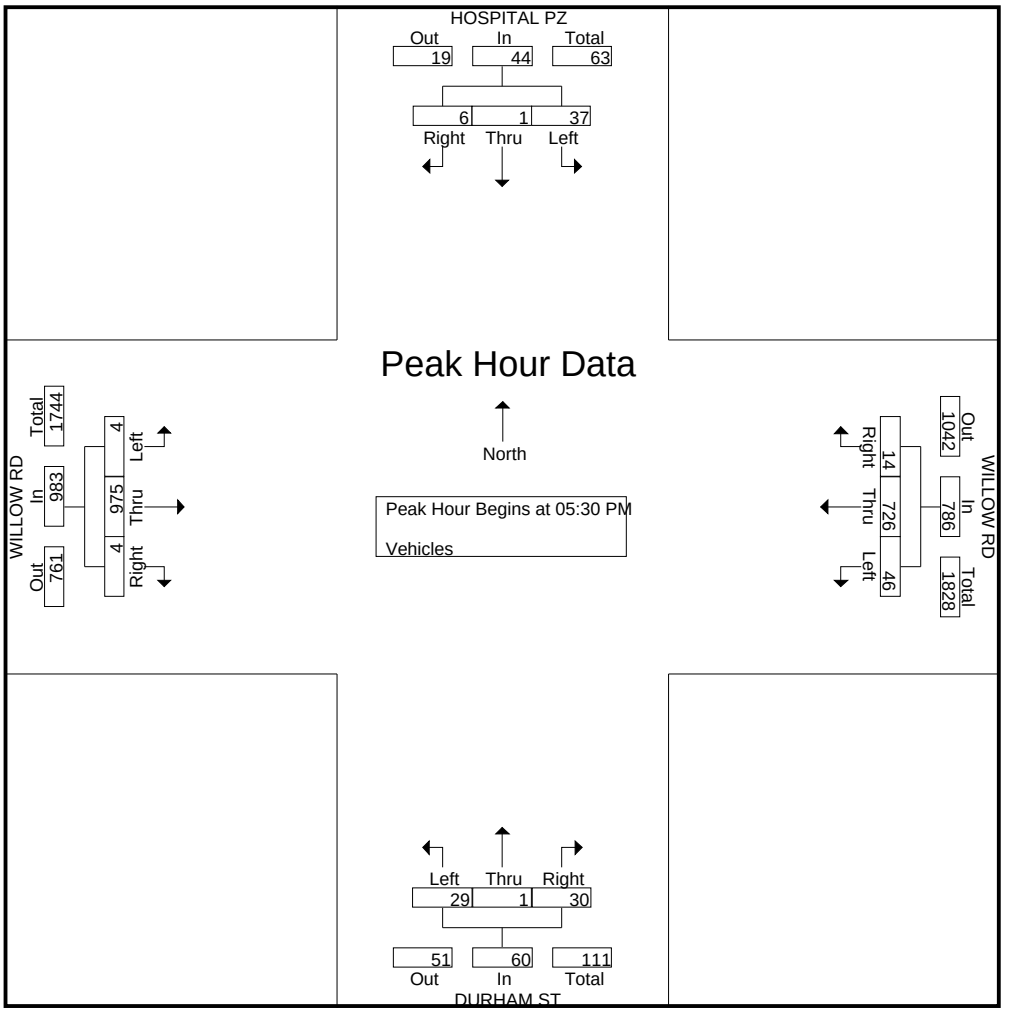

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File Name : 18AM FINAL
Site Code : 00000018
Start Date : 11/10/2022
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Groups Printed- Vehicles

	COLEMAN AVE Southbound					WILLOW RD Westbound					COLEMAN AVE Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	0	15	1	17	15	152	2	3	172	0	0	0	1	1	0	67	4	0	71	261
07:15 AM	4	0	19	0	23	20	159	0	2	181	2	1	0	0	3	2	92	1	1	96	303
07:30 AM	10	2	24	0	36	21	139	0	8	168	4	0	2	3	9	2	124	2	1	129	342
07:45 AM	5	1	40	0	46	18	140	2	7	167	4	0	1	0	5	2	169	4	4	179	397
Total	20	3	98	1	122	74	590	4	20	688	10	1	3	4	18	6	452	11	6	475	1303
08:00 AM	7	0	30	1	38	39	144	1	26	210	0	2	2	0	4	0	171	1	6	178	430
08:15 AM	8	1	45	5	59	31	193	2	25	251	1	2	1	4	8	2	148	5	4	159	477
08:30 AM	13	0	49	2	64	26	184	2	6	218	1	1	0	2	4	0	163	3	6	172	458
08:45 AM	8	2	27	3	40	26	166	0	7	199	2	2	0	1	5	2	156	8	3	169	413
Total	36	3	151	11	201	122	687	5	64	878	4	7	3	7	21	4	638	17	19	678	1778
09:00 AM	6	1	18	5	30	20	165	1	2	188	2	0	0	1	3	1	124	2	1	128	349
09:15 AM	5	0	27	5	37	6	160	0	1	167	0	2	0	1	3	0	149	2	1	152	359
09:30 AM	2	0	29	1	32	16	168	0	2	186	0	1	1	1	3	2	119	0	1	122	343
09:45 AM	6	0	17	0	23	14	155	0	1	170	1	1	0	1	3	0	100	3	2	105	301
Total	19	1	91	11	122	56	648	1	6	711	3	4	1	4	12	3	492	7	5	507	1352
Grand Total	75	7	340	23	445	252	1925	10	90	2277	17	12	7	15	51	13	1582	35	30	1660	4433
Apprch %	16.9	1.6	76.4	5.2		11.1	84.5	0.4	4		33.3	23.5	13.7	29.4		0.8	95.3	2.1	1.8		
Total %	1.7	0.2	7.7	0.5	10	5.7	43.4	0.2	2	51.4	0.4	0.3	0.2	0.3	1.2	0.3	35.7	0.8	0.7	37.4	

	COLEMAN AVE Southbound				WILLOW RD Westbound				COLEMAN AVE Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	7	0	30	37	**39**	144	1	184	0	**2**	**2**	**4**	0	**171**	1	**172**	397
08:15 AM	8	1	45	54	31	**193**	**2**	**226**	1	2	1	4	**2**	148	5	155	439
08:30 AM	**13**	0	**49**	**62**	26	184	2	212	1	1	0	2	0	163	3	166	**442**
08:45 AM	8	**2**	27	37	26	166	0	192	**2**	2	0	4	2	156	**8**	166	399
Total Volume	36	3	151	190	122	687	5	814	4	7	3	14	4	638	17	659	1677
% App. Total	18.9	1.6	79.5		15	84.4	0.6		28.6	50	21.4		0.6	96.8	2.6		
PHF	.692	.375	.770	.766	.782	.890	.625	.900	.500	.875	.375	.875	.500	.933	.531	.958	.949

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File Name : 18AM FINAL
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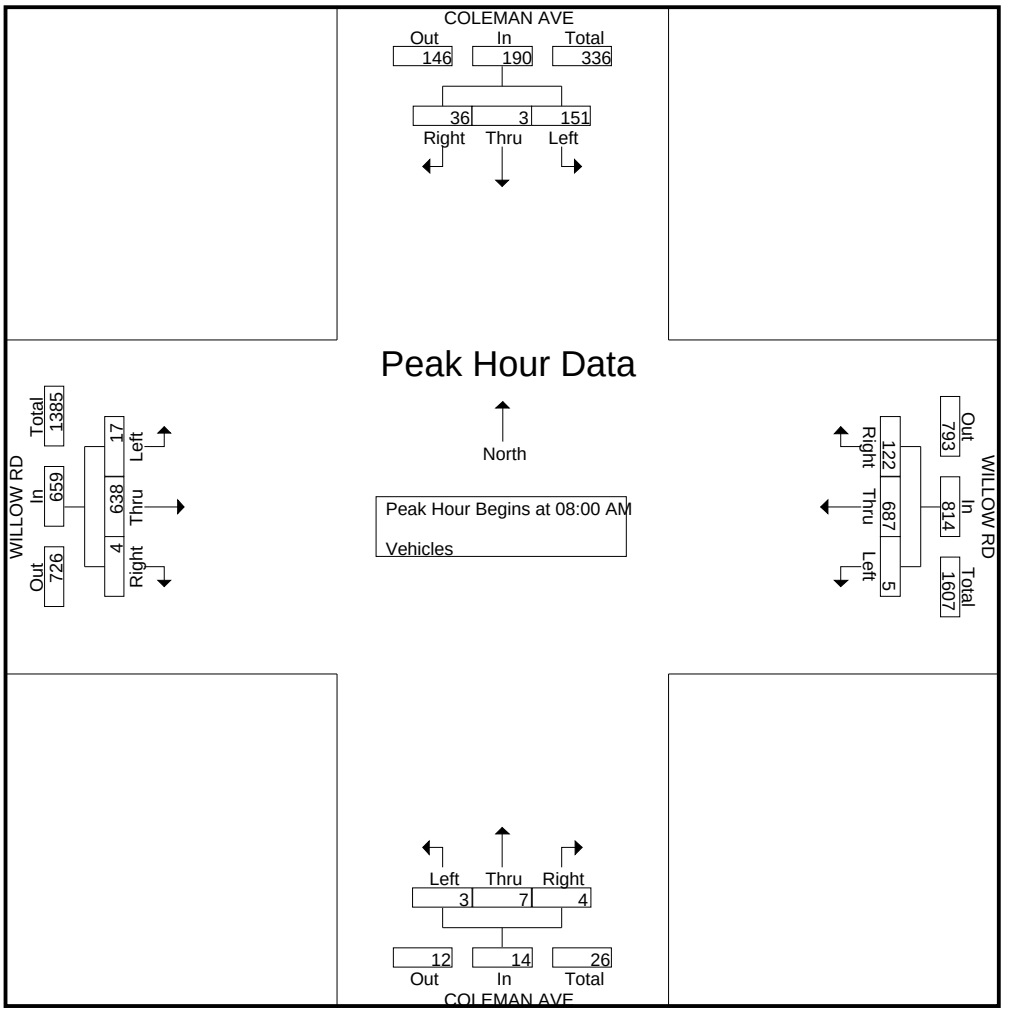

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6280 San Ignacio Ave Suite C
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File Name : 18PM FINAL
Site Code : 00000018
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Groups Printed- Vehicles

	COLEMAN AVE Southbound					WILLOW RD Westbound					COLEMAN AVE Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
02:00 PM	5	0	23	4	32	25	132	0	4	161	1	1	0	2	4	0	170	2	1	173	370
02:15 PM	6	0	34	1	41	24	123	0	11	158	0	0	0	2	2	0	182	6	14	202	403
02:30 PM	10	0	43	2	55	19	133	0	14	166	0	0	1	2	3	1	196	5	9	211	435
02:45 PM	8	0	33	2	43	22	136	2	8	168	0	0	0	2	2	0	182	5	0	187	400
Total	29	0	133	9	171	90	524	2	37	653	1	1	1	8	11	1	730	18	24	773	1608
03:00 PM	10	3	36	0	49	25	121	0	5	151	0	1	0	3	4	2	191	6	4	203	407
03:15 PM	12	1	30	1	44	22	108	1	6	137	2	0	0	2	4	3	198	2	7	210	395
03:30 PM	4	0	33	1	38	19	133	3	10	165	6	1	3	2	12	1	157	2	6	166	381
03:45 PM	8	2	35	1	46	33	140	3	6	182	3	2	0	1	6	0	169	1	4	174	408
Total	34	6	134	3	177	99	502	7	27	635	11	4	3	8	26	6	715	11	21	753	1591
04:00 PM	5	3	28	0	36	15	109	2	3	129	2	3	2	2	9	6	192	4	3	205	379
04:15 PM	8	2	28	2	40	29	123	3	5	160	2	2	0	2	6	0	212	7	8	227	433
04:30 PM	11	2	33	2	48	20	114	2	6	142	0	1	3	6	10	2	219	3	7	231	431
04:45 PM	10	0	25	1	36	15	130	3	8	156	3	2	4	6	15	3	230	6	3	242	449
Total	34	7	114	5	160	79	476	10	22	587	7	8	9	16	40	11	853	20	21	905	1692
05:00 PM	10	3	40	3	56	28	157	3	8	196	0	2	1	8	11	0	214	5	11	230	493
05:15 PM	8	2	26	4	40	23	143	1	2	169	2	3	3	1	9	1	247	3	4	255	473
05:30 PM	6	2	43	5	56	20	182	2	3	207	3	1	2	3	9	2	232	5	0	239	511
05:45 PM	7	0	25	1	33	32	161	3	7	203	2	2	3	1	8	2	234	3	3	242	486
Total	31	7	134	13	185	103	643	9	20	775	7	8	9	13	37	5	927	16	18	966	1963
06:00 PM	6	1	23	1	31	19	146	0	2	167	4	3	0	2	9	1	234	4	1	240	447
06:15 PM	6	0	21	2	29	22	146	1	0	169	0	0	0	0	0	1	231	3	1	236	434
06:30 PM	3	0	23	1	27	17	127	0	1	145	0	0	2	0	2	0	217	2	0	219	393
06:45 PM	4	0	15	0	19	29	137	0	1	167	1	1	0	0	2	1	188	3	0	192	380
Total	19	1	82	4	106	87	556	1	4	648	5	4	2	2	13	3	870	12	2	887	1654
Grand Total	147	21	597	34	799	458	2701	29	110	3298	31	25	24	47	127	26	4095	77	86	4284	8508
Apprch %	18.4	2.6	74.7	4.3		13.9	81.9	0.9	3.3		24.4	19.7	18.9	37		0.6	95.6	1.8	2		
Total %	1.7	0.2	7	0.4	9.4	5.4	31.7	0.3	1.3	38.8	0.4	0.3	0.3	0.6	1.5	0.3	48.1	0.9	1	50.4	

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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File Name : 18PM FINAL
Site Code : 00000018
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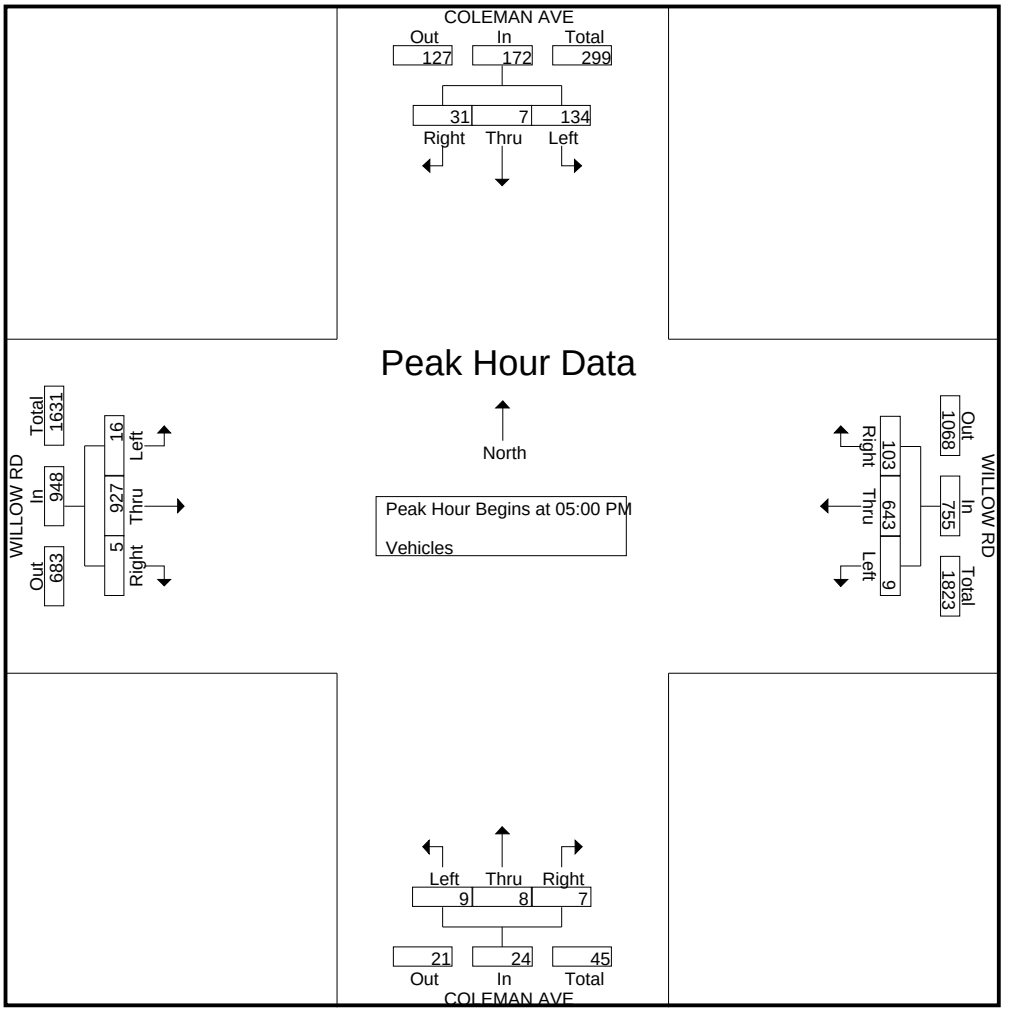
	COLEMAN AVE Southbound				WILLOW RD Westbound				COLEMAN AVE Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**10**	**3**	40	**53**	28	157	**3**	188	0	2	1	3	0	214	**5**	219	463
05:15 PM	8	2	26	36	23	143	1	167	2	**3**	**3**	**8**	1	**247**	3	**251**	462
05:30 PM	6	2	**43**	51	20	**182**	2	**204**	**3**	1	2	6	**2**	232	5	239	**500**
05:45 PM	7	0	25	32	**32**	161	3	196	2	2	3	7	2	234	3	239	474
Total Volume	31	7	134	172	103	643	9	755	7	8	9	24	5	927	16	948	1899
% App. Total	18	4.1	77.9		13.6	85.2	1.2		29.2	33.3	37.5		0.5	97.8	1.7		
PHF	.775	.583	.779	.811	.805	.883	.750	.925	.583	.667	.750	.750	.625	.938	.800	.944	.950



TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 17AM FINAL
Site Code : 00000017
Start Date : 11/10/2022
Page No : 1

Groups Printed- Vehicles

	GILBERT AVE Southbound					WILLOW RD Westbound					GILBERT AVE Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	2	2	1	5	0	159	3	1	163	13	1	5	0	19	3	56	0	0	59	246
07:15 AM	3	2	2	0	7	2	151	6	1	160	14	0	14	1	29	9	83	1	2	95	291
07:30 AM	1	1	4	0	6	4	144	7	5	160	29	9	20	1	59	9	106	1	1	117	342
07:45 AM	1	13	4	1	19	0	153	7	3	163	33	25	30	9	97	20	132	1	5	158	437
Total	5	18	12	2	37	6	607	23	10	646	89	35	69	11	204	41	377	3	8	429	1316
08:00 AM	5	24	8	0	37	0	137	8	11	156	30	33	37	1	101	9	121	1	6	137	431
08:15 AM	2	23	6	4	35	1	193	6	4	204	29	38	13	1	81	15	126	2	3	146	466
08:30 AM	4	9	9	1	23	0	188	14	2	204	22	12	12	0	46	18	125	0	0	143	416
08:45 AM	0	11	6	2	19	1	162	10	1	174	25	13	13	0	51	15	126	3	0	144	388
Total	11	67	29	7	114	2	680	38	18	738	106	96	75	2	279	57	498	6	9	570	1701
09:00 AM	7	5	3	3	18	0	163	7	0	170	19	4	11	0	34	7	107	2	0	116	338
09:15 AM	2	4	6	1	13	3	155	4	0	162	20	2	7	0	29	7	123	1	0	131	335
09:30 AM	1	1	4	1	7	0	170	4	1	175	17	1	6	0	24	2	98	1	0	101	307
09:45 AM	0	1	1	0	2	3	149	5	2	159	14	1	13	2	30	8	88	0	0	96	287
Total	10	11	14	5	40	6	637	20	3	666	70	8	37	2	117	24	416	4	0	444	1267
Grand Total	26	96	55	14	191	14	1924	81	31	2050	265	139	181	15	600	122	1291	13	17	1443	4284
Apprch %	13.6	50.3	28.8	7.3		0.7	93.9	4	1.5		44.2	23.2	30.2	2.5		8.5	89.5	0.9	1.2		
Total %	0.6	2.2	1.3	0.3	4.5	0.3	44.9	1.9	0.7	47.9	6.2	3.2	4.2	0.4	14	2.8	30.1	0.3	0.4	33.7	

	GILBERT AVE Southbound				WILLOW RD Westbound				GILBERT AVE Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	1	13	4	18	0	153	7	160	**33**	25	30	88	**20**	**132**	1	**153**	419
08:00 AM	**5**	**24**	8	**37**	0	137	8	145	30	33	**37**	**100**	9	121	1	131	413
08:15 AM	2	23	6	31	**1**	**193**	6	200	29	**38**	13	80	15	126	**2**	143	**454**
08:30 AM	4	9	**9**	22	0	188	**14**	**202**	22	12	12	46	18	125	0	143	413
Total Volume	12	69	27	108	1	671	35	707	114	108	92	314	62	504	4	570	1699
% App. Total	11.1	63.9	25		0.1	94.9	5		36.3	34.4	29.3		10.9	88.4	0.7		
PHF	.600	.719	.750	.730	.250	.869	.625	.875	.864	.711	.622	.785	.775	.955	.500	.931	.936

TRAFFIC DATA SERVICE

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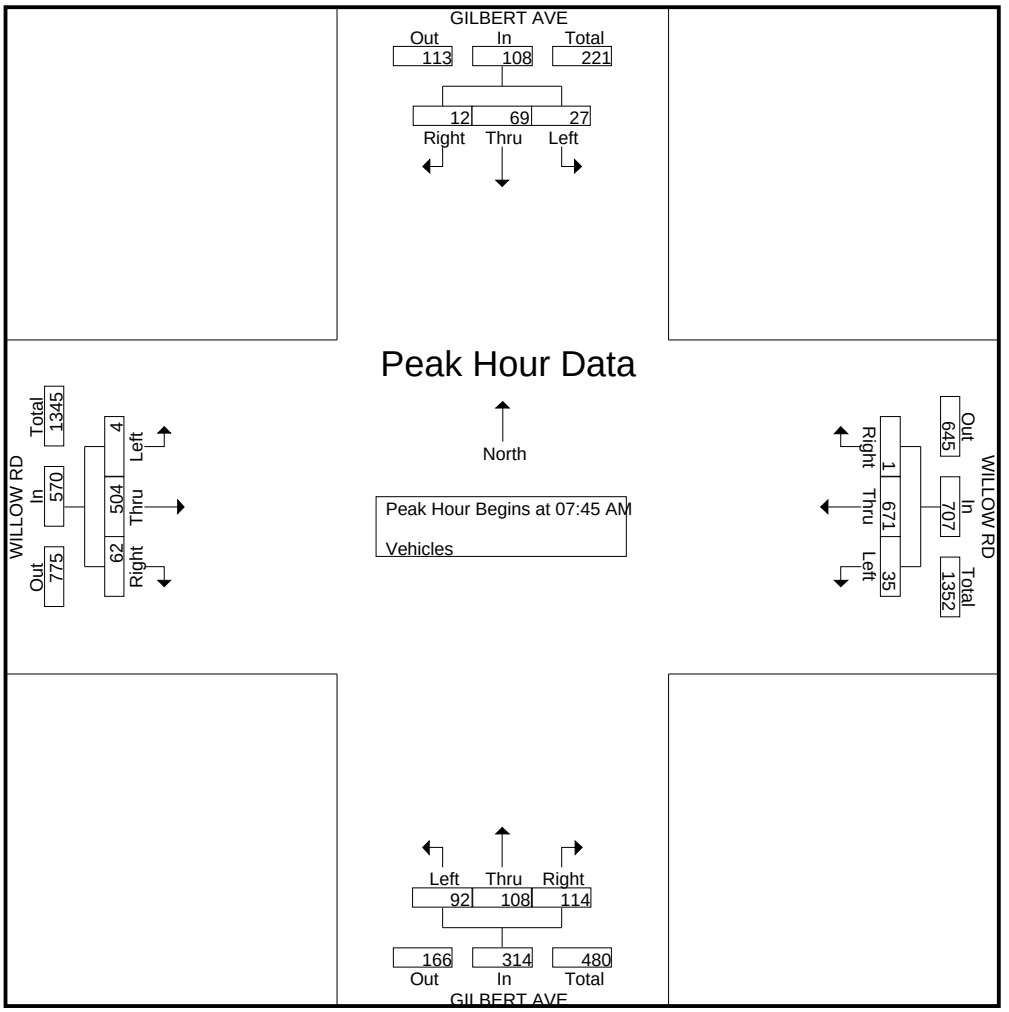

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6280 San Ignacio Ave Suite C
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File Name : 17PM FINAL
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Page No : 1

Groups Printed- Vehicles

	GILBERT AVE Southbound					WILLOW RD Westbound					GILBERT AVE Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
02:00 PM	3	11	6	1	21	2	119	11	1	133	20	19	17	0	56	7	142	5	0	154	364
02:15 PM	2	9	11	0	22	1	129	5	4	139	14	21	25	1	61	7	172	1	1	181	403
02:30 PM	1	20	2	1	24	4	131	16	0	151	20	15	18	0	53	9	169	0	0	178	406
02:45 PM	2	8	3	2	15	7	125	13	1	146	25	14	12	0	51	13	157	3	0	173	385
Total	8	48	22	4	82	14	504	45	6	569	79	69	72	1	221	36	640	9	1	686	1558
03:00 PM	1	11	7	2	21	1	122	19	2	144	16	7	5	1	29	10	176	0	5	191	385
03:15 PM	1	13	2	1	17	1	108	12	0	121	22	14	15	0	51	15	177	1	3	196	385
03:30 PM	0	11	5	0	16	1	127	15	1	144	52	14	23	2	91	16	120	0	0	136	387
03:45 PM	1	7	5	2	15	4	128	10	0	142	42	10	30	2	84	5	114	1	1	121	362
Total	3	42	19	5	69	7	485	56	3	551	132	45	73	5	255	46	587	2	9	644	1519
04:00 PM	1	5	5	1	12	1	113	14	0	128	33	7	20	2	62	13	161	2	1	177	379
04:15 PM	2	4	3	1	10	1	119	12	0	132	58	6	10	3	77	13	171	1	3	188	407
04:30 PM	0	4	6	0	10	3	114	14	2	133	35	12	20	6	73	5	189	1	3	198	414
04:45 PM	1	3	10	0	14	0	128	16	0	144	35	9	15	2	61	3	186	0	3	192	411
Total	4	16	24	2	46	5	474	56	2	537	161	34	65	13	273	34	707	4	10	755	1611
05:00 PM	1	13	4	0	18	1	156	9	3	169	30	14	25	1	70	13	186	1	2	202	459
05:15 PM	2	6	4	2	14	2	145	7	3	157	36	10	19	1	66	13	207	0	0	220	457
05:30 PM	0	4	6	1	11	1	180	8	0	189	28	12	19	2	61	16	208	1	3	228	489
05:45 PM	0	10	7	3	20	3	151	9	0	163	21	5	13	1	40	11	207	1	0	219	442
Total	3	33	21	6	63	7	632	33	6	678	115	41	76	5	237	53	808	3	5	869	1847
06:00 PM	0	2	4	1	7	7	142	8	0	157	17	4	9	0	30	14	227	1	0	242	436
06:15 PM	0	6	2	0	8	1	145	6	0	152	7	4	14	1	26	11	211	2	0	224	410
06:30 PM	1	2	6	0	9	2	114	7	0	123	14	3	9	0	26	9	207	0	1	217	375
06:45 PM	2	3	2	0	7	4	126	14	0	144	7	4	7	0	18	11	179	0	0	190	359
Total	3	13	14	1	31	14	527	35	0	576	45	15	39	1	100	45	824	3	1	873	1580
Grand Total	21	152	100	18	291	47	2622	225	17	2911	532	204	325	25	1086	214	3566	21	26	3827	8115
Apprch %	7.2	52.2	34.4	6.2		1.6	90.1	7.7	0.6		49	18.8	29.9	2.3		5.6	93.2	0.5	0.7		
Total %	0.3	1.9	1.2	0.2	3.6	0.6	32.3	2.8	0.2	35.9	6.6	2.5	4	0.3	13.4	2.6	43.9	0.3	0.3	47.2	

TRAFFIC DATA SERVICE

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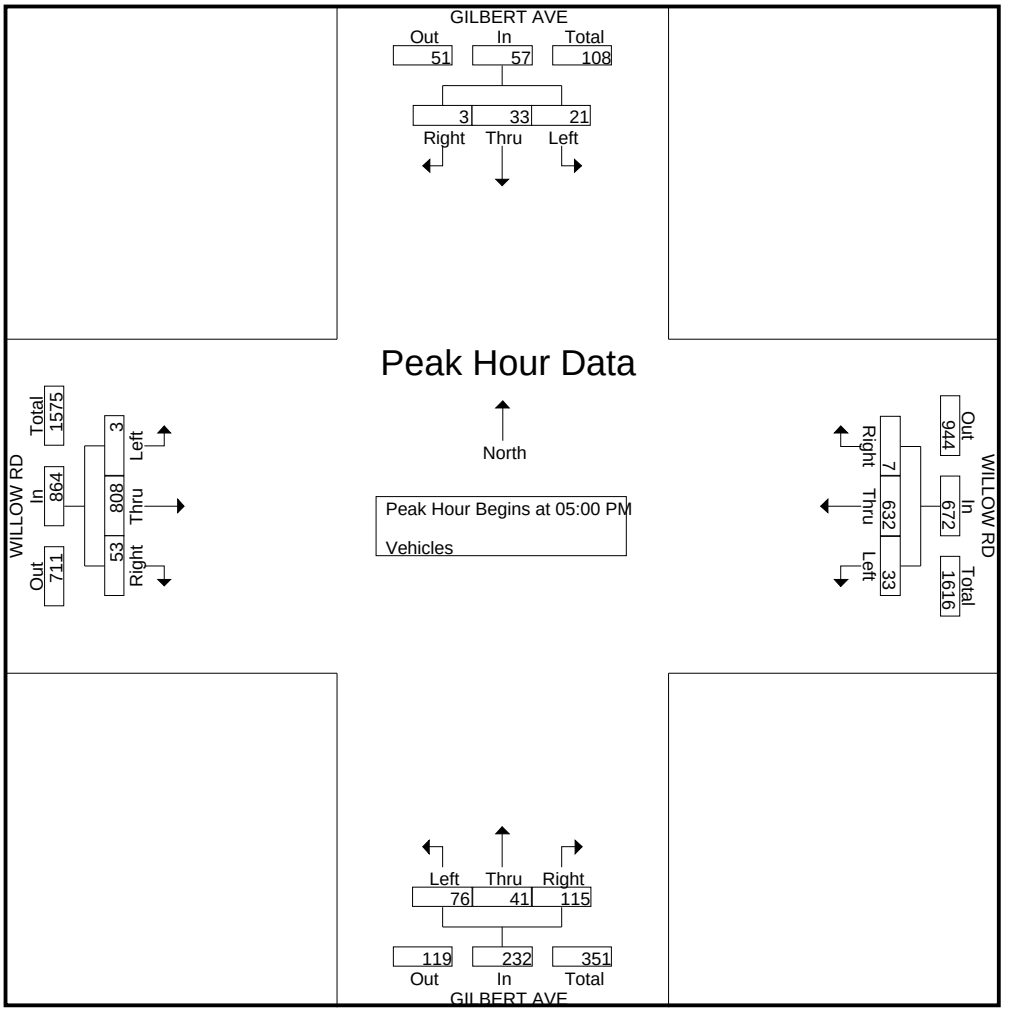
	GILBERT AVE Southbound				WILLOW RD Westbound				GILBERT AVE Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	**13**	4	**18**	1	156	**9**	166	30	**14**	**25**	**69**	13	186	**1**	200	453
05:15 PM	**2**	6	4	12	2	145	7	154	**36**	10	19	65	13	207	0	220	451
05:30 PM	0	4	6	10	1	**180**	8	**189**	28	12	19	59	**16**	**208**	1	**225**	**483**
05:45 PM	0	10	**7**	17	**3**	151	9	163	21	5	13	39	11	207	1	219	438
Total Volume	3	33	21	57	7	632	33	672	115	41	76	232	53	808	3	864	1825
% App. Total	5.3	57.9	36.8		1	94	4.9		49.6	17.7	32.8		6.1	93.5	0.3		
PHF	.375	.635	.750	.792	.583	.878	.917	.889	.799	.732	.760	.841	.828	.971	.750	.960	.945



TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 16AM FINAL
Site Code : 00000016
Start Date : 12/8/2022
Page No : 1

Groups Printed- Vehicles

	MIDDLEFIELD RD Southbound					WILLOW RD Westbound					MIDDLEFIELD RD Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	14	30	1	48	83	15	55	1	154	28	21	3	4	56	4	22	1	2	29	287
07:15 AM	0	21	31	1	53	92	27	75	3	197	24	24	8	6	62	7	21	0	0	28	340
07:30 AM	0	30	41	0	71	90	15	68	1	174	31	49	7	3	90	21	43	7	0	71	406
07:45 AM	2	53	54	0	109	120	19	72	1	212	42	75	19	4	140	16	40	6	1	63	524
Total	5	118	156	2	281	385	76	270	6	737	125	169	37	17	348	48	126	14	3	191	1557
08:00 AM	4	43	60	2	109	110	31	88	2	231	25	72	27	0	124	23	56	11	0	90	554
08:15 AM	1	58	67	2	128	90	30	84	4	208	43	69	16	1	129	34	57	9	2	102	567
08:30 AM	5	54	64	2	125	74	38	112	2	226	34	45	9	2	90	29	50	6	3	88	529
08:45 AM	6	34	38	2	80	81	36	88	2	207	30	45	12	0	87	29	59	3	2	93	467
Total	16	189	229	8	442	355	135	372	10	872	132	231	64	3	430	115	222	29	7	373	2117
09:00 AM	14	43	33	1	91	76	54	82	3	215	36	35	20	2	93	23	38	3	1	65	464
09:15 AM	3	45	40	1	89	72	42	83	2	199	38	29	17	5	89	23	57	3	3	86	463
09:30 AM	3	31	37	1	72	73	35	87	0	195	27	40	15	3	85	24	44	2	1	71	423
09:45 AM	3	31	45	0	79	68	32	83	0	183	23	35	16	2	76	14	50	2	0	66	404
Total	23	150	155	3	331	289	163	335	5	792	124	139	68	12	343	84	189	10	5	288	1754
Grand Total	44	457	540	13	1054	1029	374	977	21	2401	381	539	169	32	1121	247	537	53	15	852	5428
Apprch %	4.2	43.4	51.2	1.2		42.9	15.6	40.7	0.9		34	48.1	15.1	2.9		29	63	6.2	1.8		
Total %	0.8	8.4	9.9	0.2	19.4	19	6.9	18	0.4	44.2	7	9.9	3.1	0.6	20.7	4.6	9.9	1	0.3	15.7	

	MIDDLEFIELD RD Southbound				WILLOW RD Westbound				MIDDLEFIELD RD Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	2	53	54	109	**120**	19	72	211	42	**75**	19	**136**	16	40	6	62	518
08:00 AM	4	43	60	107	110	31	88	**229**	25	72	**27**	124	23	56	**11**	90	550
08:15 AM	1	**58**	**67**	**126**	90	30	84	204	**43**	69	16	128	**34**	**57**	9	**100**	**558**
08:30 AM	**5**	54	64	123	74	**38**	**112**	224	34	45	9	88	29	50	6	85	520
Total Volume	12	208	245	465	394	118	356	868	144	261	71	476	102	203	32	337	2146
% App. Total	2.6	44.7	52.7		45.4	13.6	41		30.3	54.8	14.9		30.3	60.2	9.5		
PHF	.600	.897	.914	.923	.821	.776	.795	.948	.837	.870	.657	.875	.750	.890	.727	.843	.961

TRAFFIC DATA SERVICE

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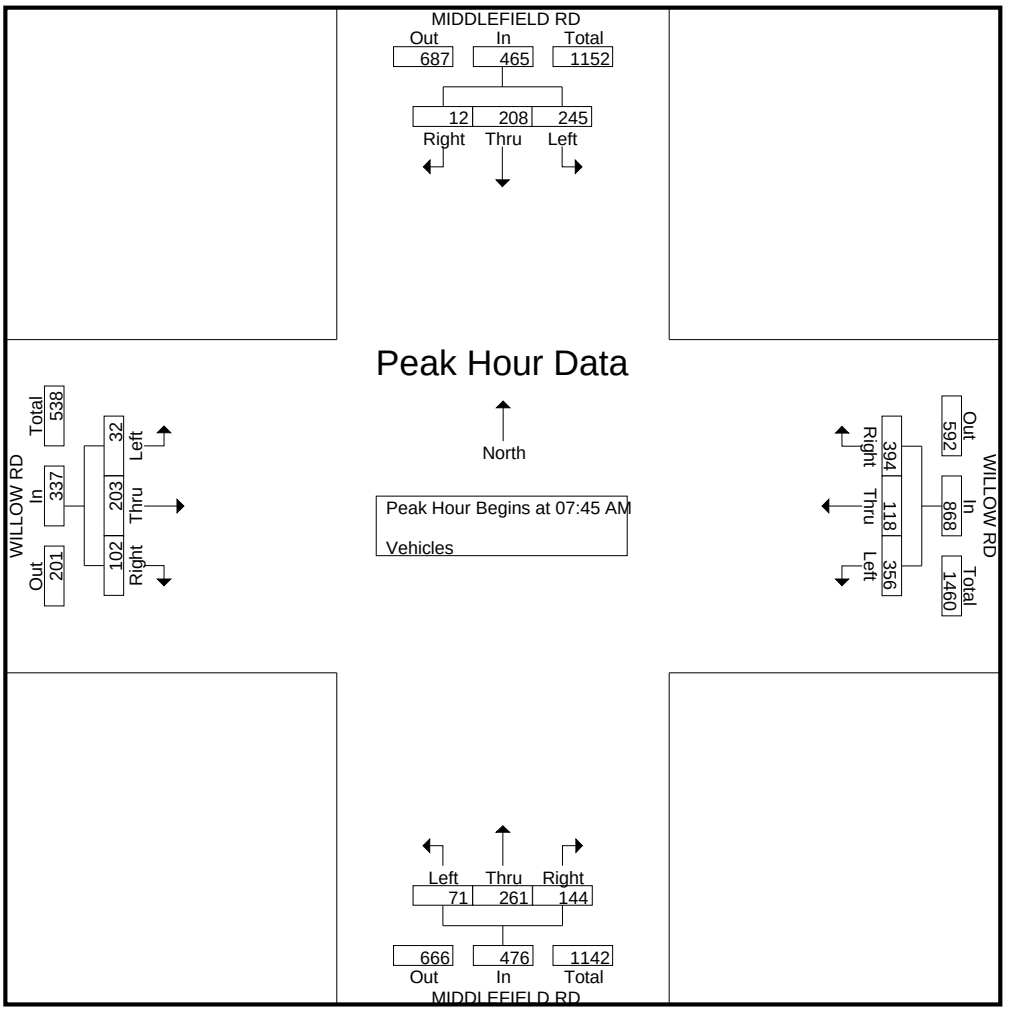

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Groups Printed- Vehicles

	MIDDLEFIELD RD Southbound					WILLOW RD Westbound					MIDDLEFIELD RD Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	4	46	63	0	113	60	23	63	2	148	57	62	13	4	136	37	70	6	1	114	511
04:15 PM	3	72	93	2	170	67	20	65	1	153	94	47	9	0	150	25	58	5	1	89	562
04:30 PM	1	70	87	1	159	74	15	53	1	143	80	80	19	3	182	43	57	11	1	112	596
04:45 PM	2	90	73	3	168	77	25	109	1	212	62	48	10	3	123	46	50	11	2	109	612
Total	10	278	316	6	610	278	83	290	5	656	293	237	51	10	591	151	235	33	5	424	2281
05:00 PM	5	66	81	0	152	71	25	62	1	159	72	94	15	7	188	32	54	8	0	94	593
05:15 PM	1	75	72	3	151	76	32	76	4	188	88	84	24	1	197	44	60	6	1	111	647
05:30 PM	1	90	78	0	169	84	20	72	1	177	59	85	16	2	162	31	65	5	1	102	610
05:45 PM	4	64	65	1	134	84	18	94	0	196	70	69	19	1	159	46	69	1	0	116	605
Total	11	295	296	4	606	315	95	304	6	720	289	332	74	11	706	153	248	20	2	423	2455
06:00 PM	1	69	90	1	161	65	17	97	0	179	86	63	13	1	163	23	71	3	0	97	600
06:15 PM	1	64	81	1	147	53	16	88	2	159	91	64	13	2	170	13	56	5	0	74	550
06:30 PM	2	46	71	0	119	77	16	62	0	155	100	41	12	0	153	15	53	3	0	71	498
06:45 PM	2	38	57	2	99	55	21	40	2	118	74	43	15	3	135	19	49	8	0	76	428
Total	6	217	299	4	526	250	70	287	4	611	351	211	53	6	621	70	229	19	0	318	2076
Grand Total	27	790	911	14	1742	843	248	881	15	1987	933	780	178	27	1918	374	712	72	7	1165	6812
Apprch %	1.5	45.4	52.3	0.8		42.4	12.5	44.3	0.8		48.6	40.7	9.3	1.4		32.1	61.1	6.2	0.6		
Total %	0.4	11.6	13.4	0.2	25.6	12.4	3.6	12.9	0.2	29.2	13.7	11.5	2.6	0.4	28.2	5.5	10.5	1.1	0.1	17.1	

	MIDDLEFIELD RD Southbound				WILLOW RD Westbound				MIDDLEFIELD RD Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	1	75	72	148	76	**32**	76	184	**88**	84	**24**	**196**	44	60	**6**	110	**638**
05:30 PM	1	**90**	78	**169**	**84**	20	72	176	59	**85**	16	160	31	65	5	101	606
05:45 PM	**4**	64	65	133	84	18	94	**196**	70	69	19	158	**46**	69	1	**116**	603
06:00 PM	1	69	**90**	160	65	17	**97**	179	86	63	13	162	23	**71**	3	97	598
Total Volume	7	298	305	610	309	87	339	735	303	301	72	676	144	265	15	424	2445
% App. Total	1.1	48.9	50		42	11.8	46.1		44.8	44.5	10.7		34	62.5	3.5		
PHF	.438	.828	.847	.902	.920	.680	.874	.938	.861	.885	.750	.862	.783	.933	.625	.914	.958

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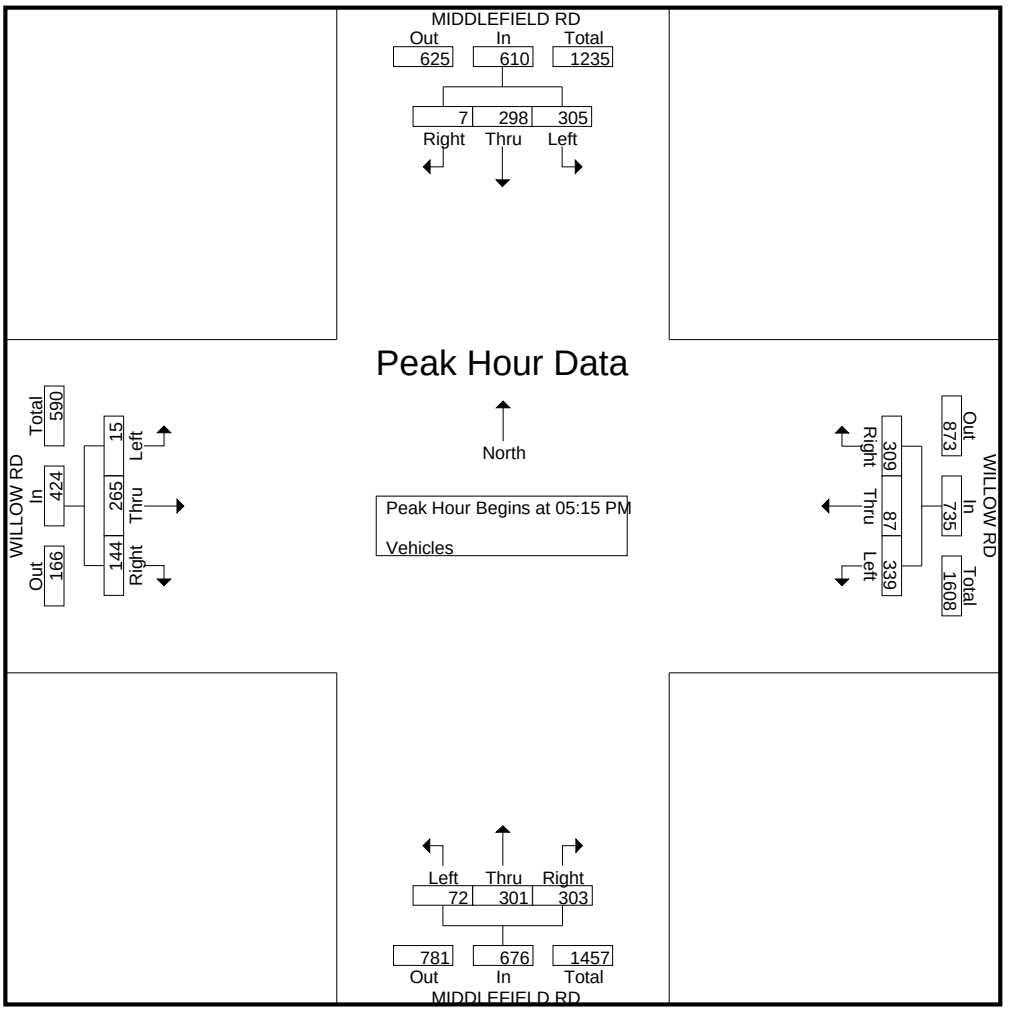
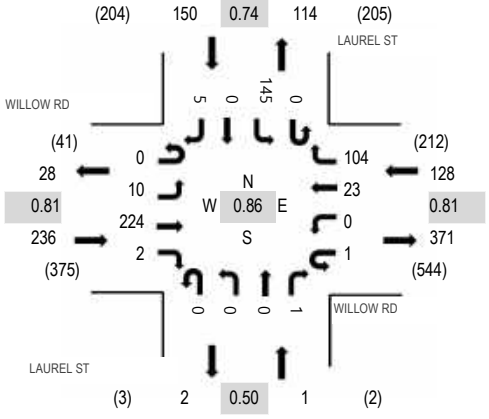


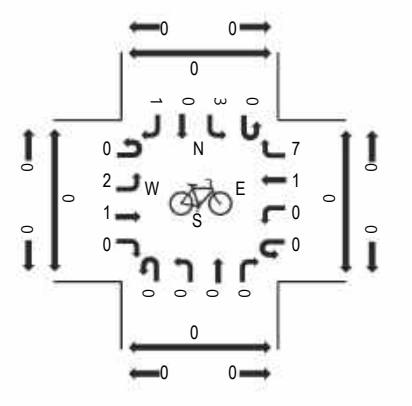
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 LAUREL ST & WILLOW RD AM
Date: Tuesday, May 2, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

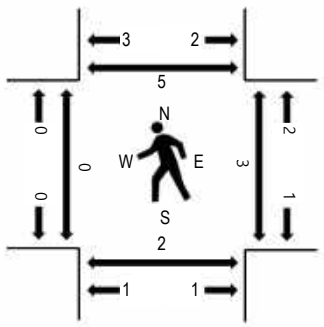
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WILLOW RD Eastbound				WILLOW RD Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	16	0	0	0	1	7	0	0	0	0	0	7	0	0	32	278	0	1	2	0
7:15 AM	0	5	27	0	0	0	2	15	0	0	0	0	0	19	0	0	68	367	0	1	3	4
7:30 AM	0	4	32	1	0	0	3	16	0	0	0	0	0	12	0	1	69	448	1	3	0	3
7:45 AM	0	7	46	0	0	0	5	35	0	0	1	0	0	14	0	1	109	508	0	0	0	1
8:00 AM	0	4	50	0	1	0	2	32	0	0	0	0	0	31	0	1	121	515	0	1	0	1
8:15 AM	0	0	72	1	0	0	9	24	0	0	0	1	0	42	0	0	149		0	0	1	2
8:30 AM	0	4	52	1	0	0	3	18	0	0	0	0	0	49	0	2	129		0	1	0	0
8:45 AM	0	2	50	0	0	0	9	30	0	0	0	0	0	23	0	2	116		0	1	1	2

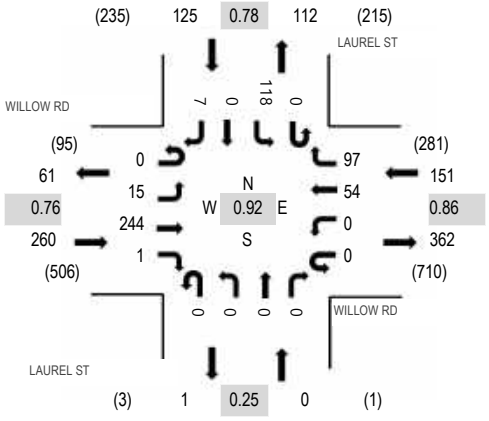
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	9	221	2	1	0	23	103	0	0	0	1	0	142	0	4	506
Mediums	0	1	3	0	0	0	0	1	0	0	0	0	0	3	0	1	9
Total	0	10	224	2	1	0	23	104	0	0	0	1	0	145	0	5	515

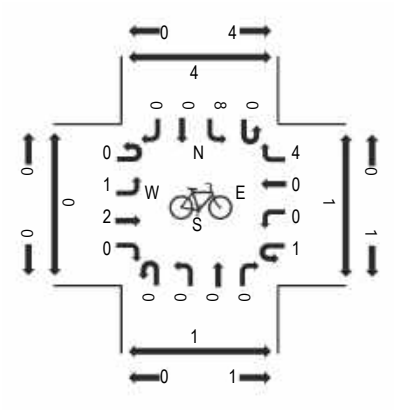
(303) 216-2439
www.alltrafficdata.net

Location: 2 LAUREL ST & WILLOW RD PM
Date: Tuesday, May 2, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

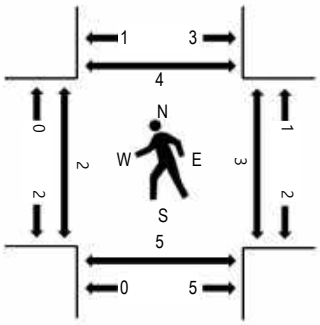
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WILLOW RD Eastbound				WILLOW RD Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	48	0	0	0	2	23	0	0	0	0	0	22	0	1	97	487	0	0	2	0
4:15 PM	0	2	85	0	0	0	5	20	1	0	0	0	0	38	0	1	152	522	0	0	0	0
4:30 PM	0	2	53	0	0	1	10	31	0	0	0	0	0	32	0	0	129	516	0	1	1	1
4:45 PM	0	1	54	0	0	0	15	23	0	0	0	0	0	16	0	0	109	524	0	2	0	2
5:00 PM	0	3	66	0	0	0	9	25	0	0	0	0	0	29	0	0	132	536	0	1	1	1
5:15 PM	0	6	71	1	0	0	10	30	0	0	0	0	0	28	0	0	146		0	0	1	2
5:30 PM	0	3	48	0	0	0	21	25	0	0	0	0	0	36	0	4	137		2	1	1	1
5:45 PM	0	3	59	0	0	0	14	17	0	0	0	0	0	25	0	3	121		0	1	2	0

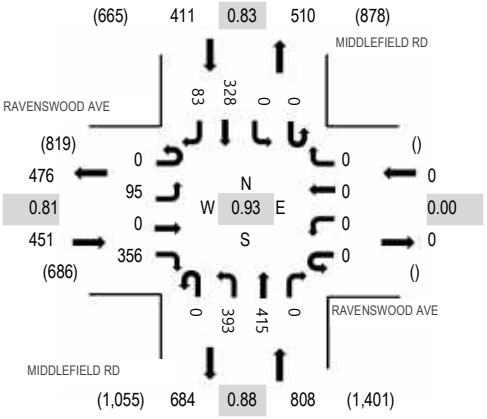
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	14	241	1	0	0	54	97	0	0	0	0	0	116	0	7	530
Mediums	0	1	3	0	0	0	0	0	0	0	0	0	0	2	0	0	6
Total	0	15	244	1	0	0	54	97	0	0	0	0	0	118	0	7	536

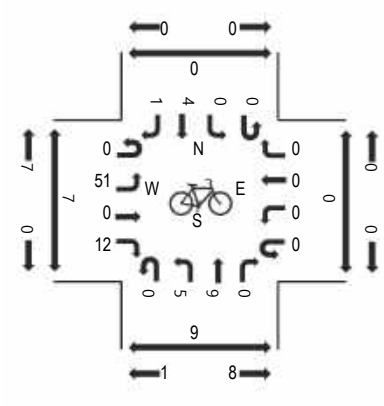
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 MIDDLEFIELD RD & RAVENSWOOD AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

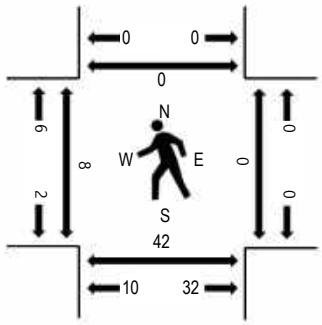
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	9	0	40	0	0	0	0	0	50	43	0	0	0	23	17	182	1,082	0	0	0	0
7:15 AM	0	6	0	38	0	0	0	0	0	66	55	0	0	0	41	16	222	1,348	0	0	0	0
7:30 AM	0	22	0	49	0	0	0	0	0	66	94	0	0	0	51	19	301	1,567	0	0	3	0
7:45 AM	0	15	0	56	0	0	0	0	0	95	124	0	0	0	73	14	377	1,655	3	0	4	0
8:00 AM	0	20	0	106	0	0	0	0	0	103	134	0	0	0	71	14	448	1,670	6	0	8	0
8:15 AM	0	30	0	110	0	0	0	0	0	102	109	0	0	0	72	18	441		1	0	23	0
8:30 AM	0	28	0	66	0	0	0	0	0	87	84	0	0	0	97	27	389		1	0	8	0
8:45 AM	0	17	0	74	0	0	0	0	0	101	88	0	0	0	88	24	392		0	0	3	0

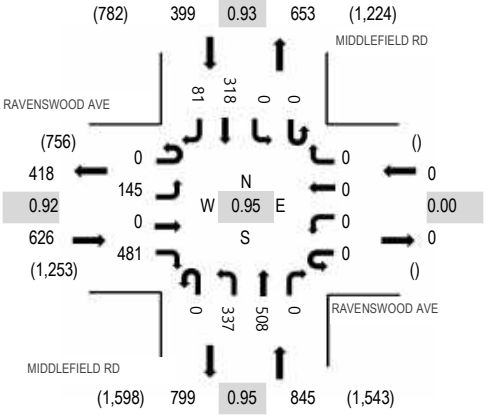
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	2	0	2	0	0	0	0	0	1	1	0	0	0	0	4	10
Lights	0	86	0	347	0	0	0	0	0	373	409	0	0	0	322	74	1,611
Mediums	0	7	0	7	0	0	0	0	0	19	5	0	0	0	6	5	49
Total	0	95	0	356	0	0	0	0	0	393	415	0	0	0	328	83	1,670

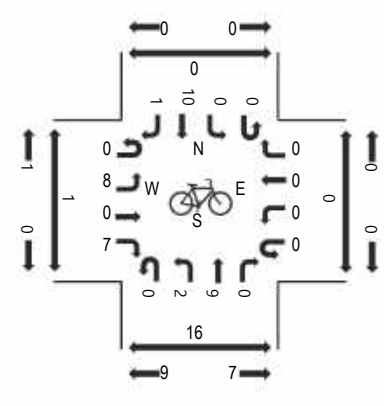
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 MIDDLEFIELD RD & RAVENSWOOD AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

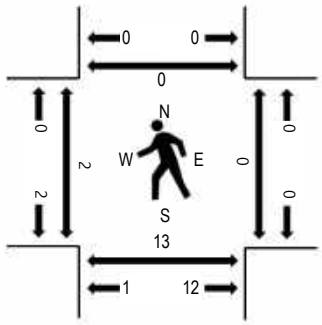
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	39	0	128	0	0	0	0	0	92	116	0	0	0	90	14	479	1,708	1	0	5	0
4:15 PM	0	36	0	115	0	0	0	0	0	63	95	0	0	0	82	12	403	1,682	0	0	2	0
4:30 PM	0	32	0	108	0	0	0	0	0	62	109	0	0	0	75	11	397	1,769	0	0	0	0
4:45 PM	0	40	0	129	0	0	0	0	0	57	104	0	0	0	72	27	429	1,838	0	0	5	0
5:00 PM	0	31	0	109	0	0	0	0	0	79	126	0	0	0	82	26	453	1,870	1	0	9	0
5:15 PM	0	42	0	133	0	0	0	0	0	84	123	0	0	0	89	19	490		1	0	2	0
5:30 PM	0	37	0	124	0	0	0	0	0	85	137	0	0	0	68	15	466		0	0	1	0
5:45 PM	0	35	0	115	0	0	0	0	0	89	122	0	0	0	79	21	461		0	0	1	0

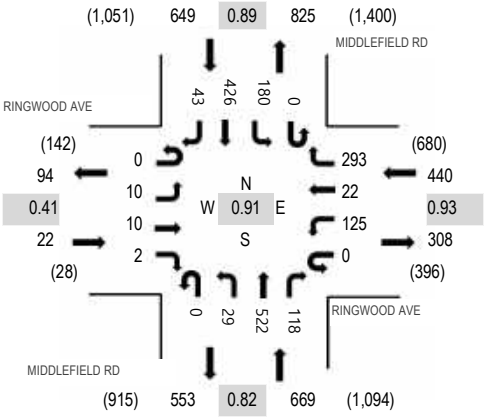
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	3
Lights	0	144	0	477	0	0	0	0	0	332	503	0	0	0	312	75	1,843
Mediums	0	1	0	4	0	0	0	0	0	3	5	0	0	0	5	6	24
Total	0	145	0	481	0	0	0	0	0	337	508	0	0	0	318	81	1,870

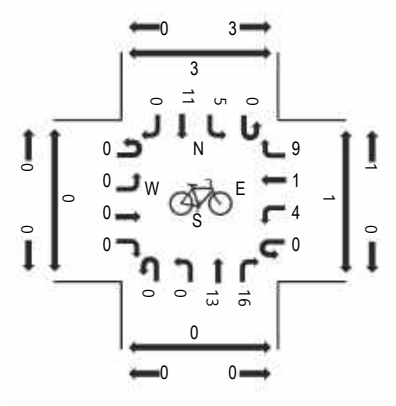
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 MIDDLEFIELD RD & RINGWOOD AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

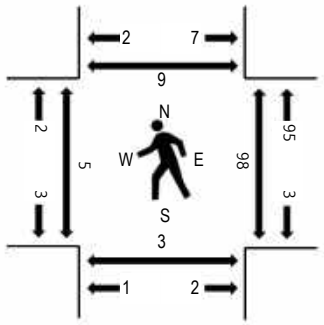
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RINGWOOD AVE Eastbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	0	1	0	1	1	27	0	12	64	2	0	12	47	5	173	1,074	0	1	0	0
7:15 AM	0	0	0	1	0	10	2	40	0	1	88	4	0	6	63	7	222	1,384	2	0	0	3
7:30 AM	0	1	0	1	0	6	2	57	0	2	106	6	0	18	83	2	284	1,651	0	12	0	1
7:45 AM	0	0	0	0	0	16	3	72	0	5	143	27	0	20	100	9	395	1,780	1	3	1	1
8:00 AM	0	3	0	1	0	31	4	76	0	5	155	45	0	57	98	8	483	1,779	2	39	1	4
8:15 AM	0	3	10	1	0	41	4	74	0	10	124	32	0	76	94	20	489		0	43	1	4
8:30 AM	0	4	0	0	0	37	11	71	0	9	100	14	0	27	134	6	413		2	13	0	0
8:45 AM	0	0	0	1	0	23	3	68	0	3	123	14	0	26	125	8	394		0	1	1	1

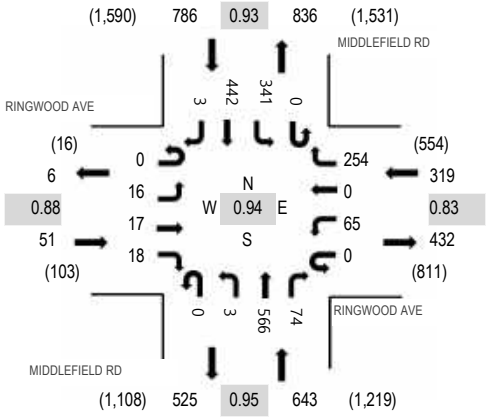
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	3	0	0	1	2	0	6
Lights	0	10	10	2	0	125	22	288	0	28	501	115	0	177	416	42	1,736
Mediums	0	0	0	0	0	0	0	5	0	1	18	3	0	2	8	1	38
Total	0	10	10	2	0	125	22	293	0	29	522	118	0	180	426	43	1,780

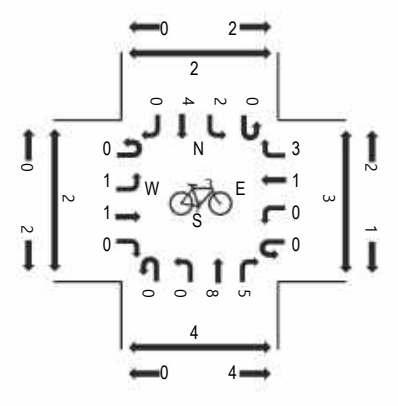
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 MIDDLEFIELD RD & RINGWOOD AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

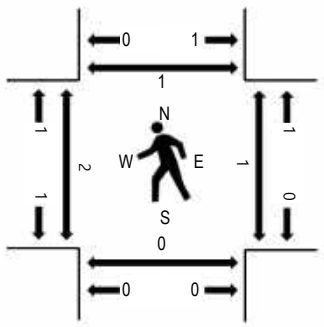
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RINGWOOD AVE Eastbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	2	8	8	0	27	1	58	0	1	130	18	0	76	129	0	458	1,667	1	1	0	1
4:15 PM	0	3	3	3	0	9	0	42	0	1	119	16	0	68	148	1	413	1,636	1	2	1	3
4:30 PM	0	1	8	6	0	10	0	42	0	2	127	15	0	74	107	2	394	1,704	0	0	0	0
4:45 PM	0	2	2	6	0	10	0	36	0	2	133	12	0	79	120	0	402	1,753	0	3	0	1
5:00 PM	0	5	6	4	0	10	0	56	0	0	145	12	0	73	116	0	427	1,799	1	0	0	1
5:15 PM	0	4	6	3	0	16	0	58	0	1	145	24	0	101	121	2	481		1	0	0	0
5:30 PM	0	3	2	6	0	14	0	69	0	2	151	12	0	85	99	0	443		0	1	0	0
5:45 PM	0	4	3	5	0	25	0	71	0	0	125	26	0	82	106	1	448		0	0	0	0

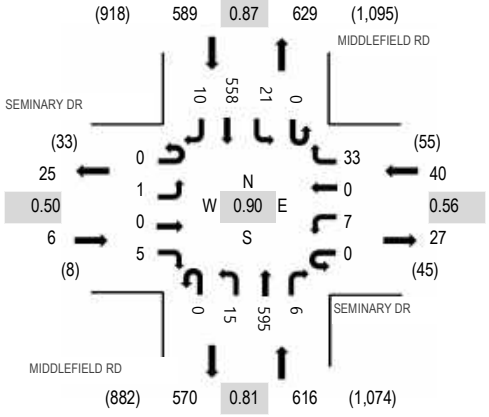
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
Lights	0	16	17	18	0	65	0	253	0	3	558	73	0	337	437	3	1,780
Mediums	0	0	0	0	0	0	0	1	0	0	6	1	0	4	4	0	16
Total	0	16	17	18	0	65	0	254	0	3	566	74	0	341	442	3	1,799

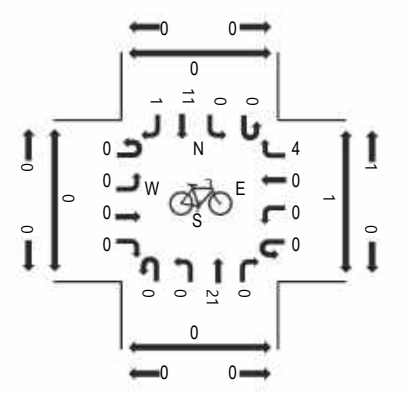
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 MIDDLEFIELD RD & SEMINARY DR AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

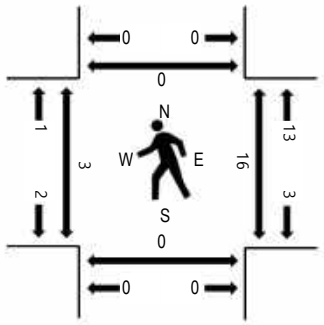
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SEMINARY DR Eastbound				SEMINARY DR Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	1	0	1	0	0	81	0	0	0	39	2	124	804	0	0	0	0
7:15 AM	0	0	0	1	0	0	0	5	0	3	89	0	0	6	69	1	174	1,028	0	1	0	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	117	0	0	5	92	0	215	1,160	1	1	0	0
7:45 AM	0	0	0	0	0	1	0	7	0	1	166	1	0	6	108	1	291	1,238	0	4	0	0
8:00 AM	0	1	0	1	0	5	0	13	0	0	199	0	0	4	124	1	348	1,251	1	5	0	0
8:15 AM	0	0	0	3	0	0	0	6	0	5	153	3	0	8	127	1	306		1	6	0	0
8:30 AM	0	0	0	1	0	1	0	7	0	4	109	2	0	4	160	5	293		1	5	0	0
8:45 AM	0	0	0	0	0	1	0	7	0	6	134	1	0	5	147	3	304		0	0	0	0

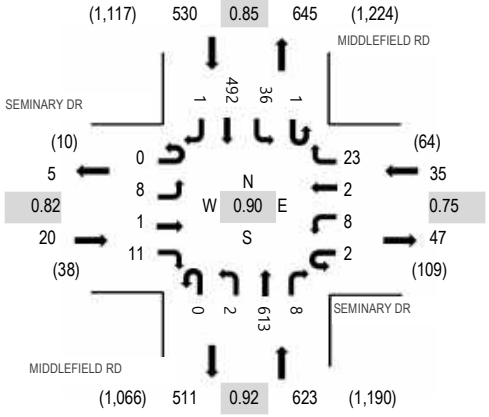
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4
Lights	0	1	0	5	0	7	0	33	0	15	573	5	0	21	548	10	1,218
Mediums	0	0	0	0	0	0	0	0	0	0	20	1	0	0	8	0	29
Total	0	1	0	5	0	7	0	33	0	15	595	6	0	21	558	10	1,251

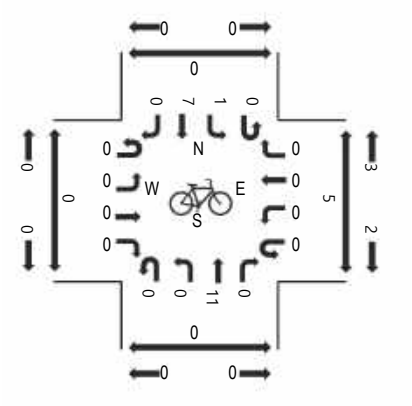
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 MIDDLEFIELD RD & SEMINARY DR PM
Date: Wednesday, May 24, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

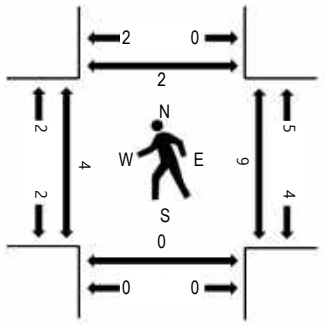
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SEMINARY DR Eastbound				SEMINARY DR Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	2	0	0	0	10	0	1	141	5	0	17	154	1	331	1,201	2	2	0	0
4:15 PM	0	2	0	4	0	2	0	4	0	0	134	4	0	14	139	0	303	1,160	0	1	0	0
4:30 PM	0	2	0	1	0	2	0	4	0	2	131	4	2	8	115	0	271	1,191	1	1	0	0
4:45 PM	0	1	0	3	0	2	0	4	0	1	149	4	0	12	120	0	296	1,208	1	1	0	0
5:00 PM	0	2	0	3	0	2	0	7	0	1	143	1	0	8	122	1	290	1,208	0	2	0	0
5:15 PM	0	3	0	3	2	1	2	7	0	0	167	2	1	7	139	0	334		3	1	0	2
5:30 PM	0	2	1	2	0	3	0	5	0	0	154	1	0	9	111	0	288		0	5	0	0
5:45 PM	0	4	0	3	1	2	0	4	0	1	141	3	0	6	131	0	296		0	1	0	0

Peak Rolling Hour Flow Rates

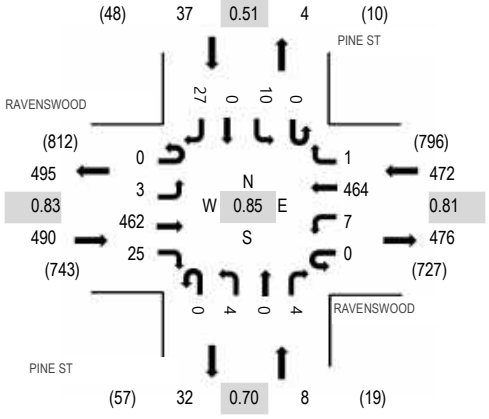
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	2	0	2	0	0	0	0	0	0	0	1	0	5
Lights	0	8	1	11	0	8	0	23	0	2	608	8	1	36	486	1	1,193
Mediums	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	10
Total	0	8	1	11	2	8	2	23	0	2	613	8	1	36	492	1	1,208

ALL TRAFFIC DATA SERVICES

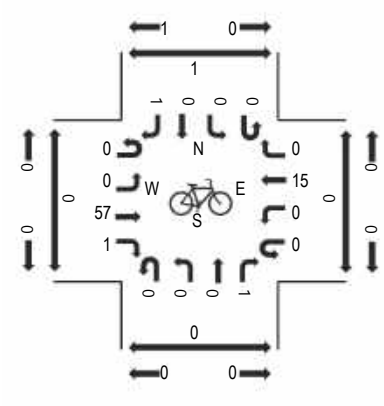
(303) 216-2439
www.alltrafficdata.net

Location: 6 PINE ST & RAVENSWOOD AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

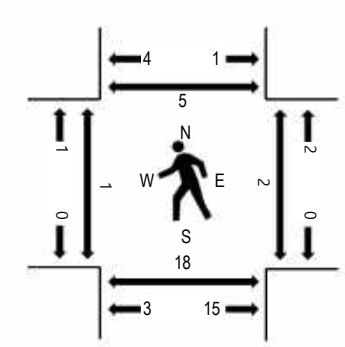
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD Eastbound				RAVENSWOOD Westbound				PINE ST Northbound				PINE ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	46	2	1	2	58	2	0	0	0	2	0	0	0	2	115	599	0	0	0	1
7:15 AM	0	0	46	4	0	4	70	1	0	0	1	2	0	2	0	1	131	736	0	0	0	1
7:30 AM	0	0	70	3	0	2	80	1	0	1	0	2	0	0	0	2	161	902	0	0	2	1
7:45 AM	0	0	76	6	0	2	100	1	0	0	0	3	0	1	0	3	192	953	1	1	4	0
8:00 AM	0	3	129	5	0	1	101	0	0	2	0	3	0	0	0	8	252	1,007	0	0	7	0
8:15 AM	0	0	143	5	0	1	144	0	0	0	0	0	0	1	0	3	297		1	1	8	1
8:30 AM	0	0	90	9	0	3	101	0	0	2	0	0	0	4	0	3	212		0	1	0	1
8:45 AM	0	0	100	6	0	2	118	1	0	0	0	1	0	5	0	13	246		0	0	3	3

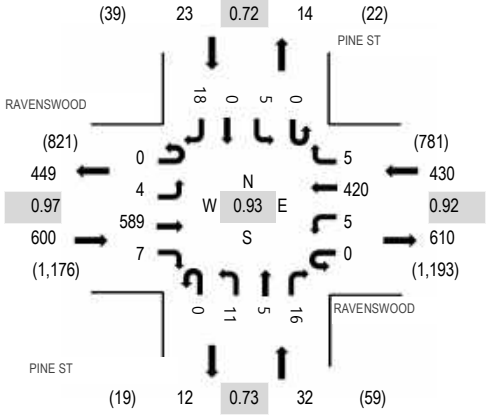
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	0	5	0	0	1	0	0	0	0	0	0	11
Lights	0	3	440	25	0	7	431	1	0	2	0	3	0	10	0	27	949
Mediums	0	0	17	0	0	0	28	0	0	1	0	1	0	0	0	0	47
Total	0	3	462	25	0	7	464	1	0	4	0	4	0	10	0	27	1,007

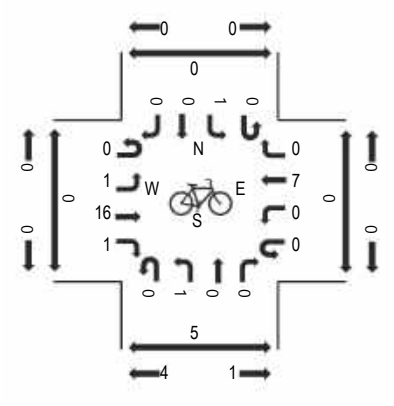
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 6 PINE ST & RAVENSWOOD PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

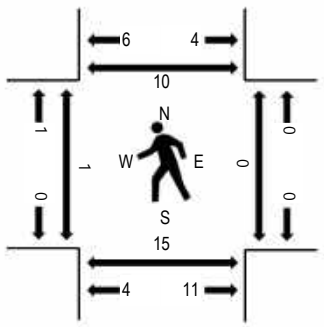
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

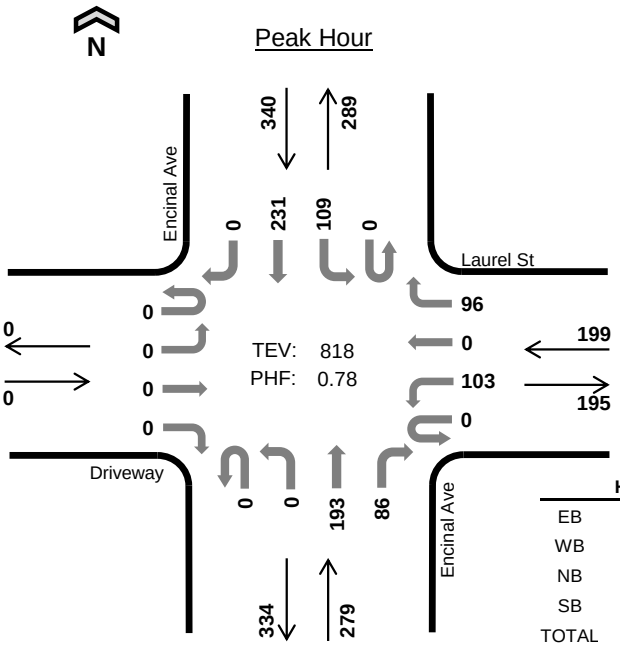
Interval Start Time	RAVENSWOOD Eastbound				RAVENSWOOD Westbound				PINE ST Northbound				PINE ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	145	2	0	0	111	0	0	4	1	5	0	1	0	1	273	970	0	0	11	3
4:15 PM	0	1	134	0	0	0	80	0	0	2	0	3	0	2	0	3	225	973	0	0	1	0
4:30 PM	0	0	139	2	0	0	78	1	0	4	0	2	0	1	0	4	231	1,041	0	0	0	3
4:45 PM	0	1	149	0	0	3	78	0	0	3	1	2	0	0	0	4	241	1,074	0	0	2	2
5:00 PM	0	1	153	2	0	1	102	1	0	3	2	6	0	1	0	4	276	1,085	0	0	9	3
5:15 PM	0	2	158	1	0	3	108	1	0	4	2	6	0	2	0	6	293		0	0	2	4
5:30 PM	0	0	158	2	0	1	94	2	0	2	0	2	0	0	0	3	264		1	0	3	3
5:45 PM	0	1	120	2	0	0	116	1	0	2	1	2	0	2	0	5	252		0	0	1	0

Peak Rolling Hour Flow Rates

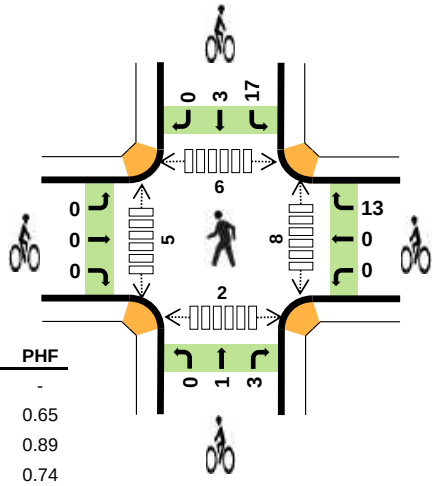
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	4	576	7	0	5	403	4	0	11	5	16	0	5	0	18	1,054
Mediums	0	0	13	0	0	0	16	1	0	0	0	0	0	0	0	0	30
Total	0	4	589	7	0	5	420	5	0	11	5	16	0	5	0	18	1,085

Encinal Ave
Laurel St

Date: 04/18/2023
Count Period: 7:00 AM to 10:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	3.0%	0.65
NB	0.4%	0.89
SB	2.6%	0.74
TOTAL	2.0%	0.78



Three-Hour Count Summaries

Interval Start		Driveway Eastbound				Laurel St Westbound				Encinal Ave Northbound				Encinal Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	0	0	0	0	16	0	39	0	0	55	23	0	39	70	0	242	0
8:00 AM		0	0	0	0	0	41	0	36	0	0	52	18	0	49	66	0	262	0
8:15 AM		0	0	0	0	0	26	0	15	0	0	40	25	0	13	45	0	164	0
8:30 AM		0	0	0	0	0	20	0	6	0	0	46	20	0	8	50	0	150	818
Peak Hour	All	0	0	0	0	0	103	0	96	0	0	193	86	0	109	231	0	818	0
	HV	0	0	0	0	0	4	0	2	0	0	1	0	0	1	8	0	16	0
	HV%	-	-	-	-	-	4%	-	2%	-	-	1%	0%	-	1%	3%	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	0	3	0	5	*8*	0	8	1	12	*21*	8	1	4	0	*13*
8:00 AM	0	1	0	0	*1*	0	5	0	4	*9*	0	3	2	0	*5*
8:15 AM	0	1	0	2	*3*	0	0	3	4	*7*	0	1	0	2	*3*
8:30 AM	0	1	1	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	6	1	9	*16*	0	13	4	20	*37*	8	5	6	2	*21*

Three-Hour Count Summaries

Interval Start	Driveway				Laurel St				Encinal Ave				Encinal Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	4	0	2	0	0	9	3	0	1	11	0	30	0
7:15 AM	0	0	0	0	0	3	0	3	0	0	16	8	0	6	16	0	52	0
7:30 AM	0	0	0	0	0	3	0	14	0	0	41	12	0	12	28	0	110	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**39**	**0**	**0**	**55**	**23**	**0**	**39**	**70**	**0**	**242**	434
8:00 AM	**0**	**0**	**0**	**0**	**0**	**41**	**0**	**36**	**0**	**0**	**52**	**18**	**0**	**49**	**66**	**0**	**262**	666
8:15 AM	**0**	**0**	**0**	**0**	**0**	**26**	**0**	**15**	**0**	**0**	**40**	**25**	**0**	**13**	**45**	**0**	**164**	778
8:30 AM	**0**	**0**	**0**	**0**	**0**	**20**	**0**	**6**	**0**	**0**	**46**	**20**	**0**	**8**	**50**	**0**	**150**	**818**
8:45 AM	0	0	0	1	0	4	0	7	0	0	34	18	0	5	28	0	97	673
9:00 AM	0	1	0	0	0	15	1	3	0	0	27	10	0	7	15	0	79	490
9:15 AM	0	0	0	0	0	14	0	10	0	0	25	8	0	11	28	0	96	422
9:30 AM	0	0	0	0	0	10	0	5	0	0	22	7	0	4	35	0	83	355
9:45 AM	0	0	0	0	0	7	0	7	0	0	23	4	0	6	29	0	76	334
Count Total	0	1	0	1	0	163	1	147	0	0	390	156	0	161	421	0	1,441	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**103**	**0**	**96**	**0**	**0**	**193**	**86**	**0**	**109**	**231**	**0**	**818**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**1**	**8**	**0**	**16**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**4%**	**-**	**2%**	**-**	**-**	**1%**	**0%**	**-**	**1%**	**3%**	**-**	**2%**	**0**

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	2	0	*2*	0	0	0	0	*0*	1	0	0	0	*1*
7:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	0	2	*2*	0	2	1	1	*4*	2	0	0	0	*2*
7:45 AM	**0**	**3**	**0**	**5**	***8***	**0**	**8**	**1**	**12**	***21***	**8**	**1**	**4**	**0**	*13*
8:00 AM	**0**	**1**	**0**	**0**	***1***	**0**	**5**	**0**	**4**	***9***	**0**	**3**	**2**	**0**	*5*
8:15 AM	**0**	**1**	**0**	**2**	***3***	**0**	**0**	**3**	**4**	***7***	**0**	**1**	**0**	**2**	*3*
8:30 AM	**0**	**1**	**1**	**2**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	0	2	1	*3*	0	1	0	1	*2*	0	0	0	0	*0*
9:00 AM	0	1	1	3	*5*	0	0	1	1	*2*	0	1	0	0	*1*
9:15 AM	0	0	2	5	*7*	0	1	0	2	*3*	0	0	0	0	*0*
9:30 AM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:45 AM	0	1	1	1	*3*	0	0	0	1	*1*	2	0	0	0	*2*
Count Total	0	8	10	21	*39*	0	17	6	26	*49*	13	6	6	2	*27*
Peak Hour	**0**	**6**	**1**	**9**	***16***	**0**	**13**	**4**	**20**	***37***	**8**	**5**	**6**	**2**	***21***

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Driveway				Laurel St				Encinal Ave				Encinal Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**8**	12
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	11
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	14
8:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**4**	**16**
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	11
9:00 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	1	2	0	5	15
9:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	3	0	7	19
9:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	16
9:45 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	3	16
Count Total	0	0	0	0	0	5	0	3	0	0	8	2	0	6	15	0	39	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**1**	**8**	**0**	**16**	**0**

Three-Hour Count Summaries - Bikes

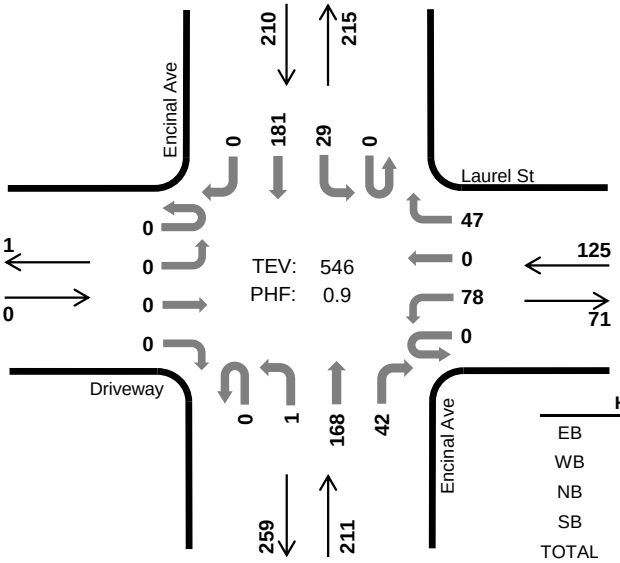
Interval Start	Driveway			Laurel St			Encinal Ave			Encinal Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	2	0	1	0	0	1	0	4	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**1**	**0**	**9**	**3**	**0**	**21**	25
8:00 AM	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**4**	**0**	**0**	**9**	34
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**4**	**0**	**0**	**7**	41
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**37**
8:45 AM	0	0	0	1	0	0	0	0	0	0	1	0	2	18
9:00 AM	0	0	0	0	0	0	0	0	1	0	1	0	2	11
9:15 AM	0	0	0	0	0	1	0	0	0	1	1	0	3	7
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7
9:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	6
Count Total	0	0	0	1	0	16	0	2	4	19	7	0	49	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**1**	**3**	**17**	**3**	**0**	**37**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

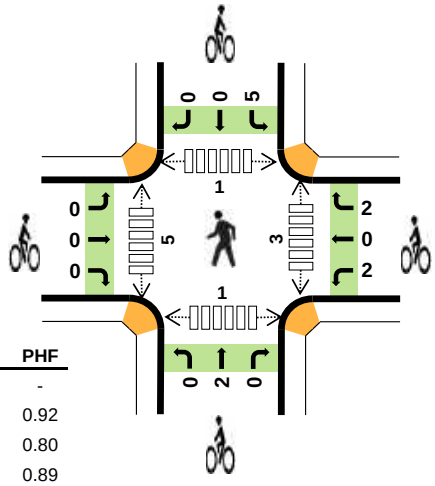
Encinal Ave
Laurel St

Date: 04/18/2023
Count Period: 4:00 PM to 7:00 PM
Peak Hour: 5:00 PM to 6:00 PM

Peak Hour



	HV %:	PHF
EB	-	-
WB	0.0%	0.92
NB	1.9%	0.80
SB	0.5%	0.89
TOTAL	0.9%	0.90



Three-Hour Count Summaries

Interval Start		Driveway Eastbound				Laurel St Westbound				Encinal Ave Northbound				Encinal Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM		0	0	0	0	0	20	0	6	0	0	55	11	0	9	50	0	151	0
5:15 PM		0	0	0	0	0	17	0	17	0	0	36	19	0	5	41	0	135	0
5:30 PM		0	0	0	0	0	22	0	11	0	0	32	8	0	6	41	0	120	0
5:45 PM		0	0	0	0	0	19	0	13	0	1	45	4	0	9	49	0	140	546
Peak Hour	All	0	0	0	0	0	78	0	47	0	1	168	42	0	29	181	0	546	0
	HV	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	5	0
	HV%	-	-	-	-	-	0%	-	0%	-	0%	2%	0%	-	0%	1%	-	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:00 PM	0	0	2	0	*2*	0	2	1	1	*4*	0	2	0	0	*2*
5:15 PM	0	0	0	1	*1*	0	2	0	3	*5*	3	2	0	1	*6*
5:30 PM	0	0	1	0	*1*	0	0	1	1	*2*	0	0	0	0	*0*
5:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	1	1	0	*2*
Peak Hour	0	0	4	1	*5*	0	4	2	5	*11*	3	5	1	1	*10*

Three-Hour Count Summaries

Interval Start	Driveway				Laurel St				Encinal Ave				Encinal Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	27	0	11	0	0	34	6	0	10	38	0	126	0
4:15 PM	0	0	0	0	0	19	0	14	0	0	41	4	0	8	36	0	122	0
4:30 PM	0	0	0	1	0	14	0	12	0	0	45	9	0	10	34	0	125	0
4:45 PM	0	0	0	0	0	13	0	10	0	0	27	13	0	12	59	0	134	507
5:00 PM	**0**	**0**	**0**	**0**	**0**	**20**	**0**	**6**	**0**	**0**	**55**	**11**	**0**	**9**	**50**	**0**	**151**	532
5:15 PM	**0**	**0**	**0**	**0**	**0**	**17**	**0**	**17**	**0**	**0**	**36**	**19**	**0**	**5**	**41**	**0**	**135**	545
5:30 PM	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**11**	**0**	**0**	**32**	**8**	**0**	**6**	**41**	**0**	**120**	540
5:45 PM	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**13**	**0**	**1**	**45**	**4**	**0**	**9**	**49**	**0**	**140**	**546**
6:00 PM	0	0	0	0	0	14	0	4	0	0	38	4	0	4	47	0	111	506
6:15 PM	0	0	0	0	0	8	0	10	0	1	41	3	0	2	25	0	90	461
6:30 PM	0	0	0	0	0	19	0	5	0	0	20	2	0	1	39	0	86	427
6:45 PM	0	0	0	0	0	5	0	5	0	0	15	3	0	5	26	0	59	346
Count Total	0	0	0	1	0	197	0	118	0	2	429	86	0	81	485	0	1,399	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**78**	**0**	**47**	**0**	**1**	**168**	**42**	**0**	**29**	**181**	**0**	**546**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**5**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**-**	**0%**	**2%**	**0%**	**-**	**0%**	**1%**	**-**	**1%**	**0**

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	1	*1*	0	3	0	0	*3*	2	1	1	0	*4*
4:15 PM	0	0	1	0	*1*	0	1	0	0	*1*	0	0	0	0	*0*
4:30 PM	0	0	1	1	*2*	0	2	0	0	*2*	0	0	1	0	*1*
4:45 PM	0	0	0	0	*0*	0	3	1	1	*5*	1	3	3	1	*8*
5:00 PM	**0**	**0**	**2**	**0**	***2***	**0**	**2**	**1**	**1**	***4***	**0**	**2**	**0**	**0**	*2*
5:15 PM	**0**	**0**	**0**	**1**	***1***	**0**	**2**	**0**	**3**	***5***	**3**	**2**	**0**	**1**	*6*
5:30 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**0**	***2***
6:00 PM	0	0	1	0	*1*	0	3	0	0	*3*	1	1	1	1	*4*
6:15 PM	0	0	0	0	*0*	0	1	2	0	*3*	0	0	2	0	*2*
6:30 PM	0	0	0	0	*0*	0	1	1	0	*2*	0	1	1	0	*2*
6:45 PM	0	0	0	0	*0*	0	1	0	0	*1*	0	1	0	0	*1*
Count Total	0	0	7	3	*10*	0	19	6	6	*31*	7	12	10	3	*32*
Peak Hour	**0**	**0**	**4**	**1**	***5***	**0**	**4**	**2**	**5**	***11***	**3**	**5**	**1**	**1**	***10***

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Driveway				Laurel St				Encinal Ave				Encinal Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	5
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	5
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	4
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**5**
6:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	4
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	7	0	0	1	2	0	10	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**5**	**0**

Three-Hour Count Summaries - Bikes

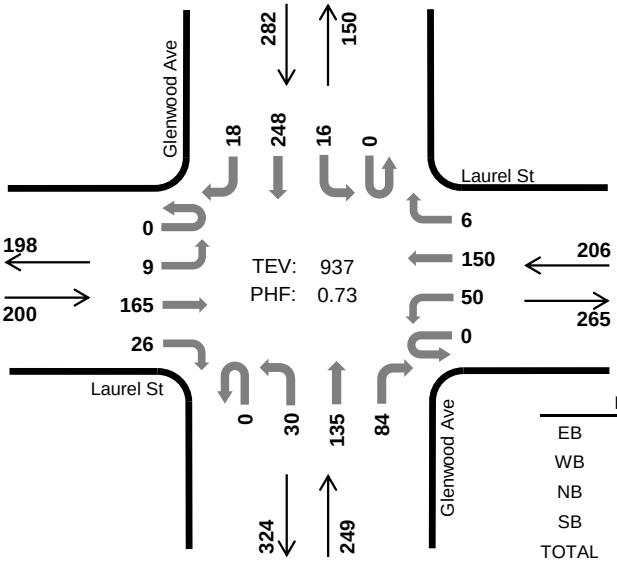
Interval Start	Driveway			Laurel St			Encinal Ave			Encinal Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	3	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	2	0
4:45 PM	0	0	0	0	0	3	0	1	0	1	0	0	5	11
5:00 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**4**	12
5:15 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**5**	16
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	16
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**
6:00 PM	0	0	0	1	0	2	0	0	0	0	0	0	3	10
6:15 PM	0	0	0	0	0	1	0	2	0	0	0	0	3	8
6:30 PM	0	0	0	1	0	0	0	0	1	0	0	0	2	8
6:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	9
Count Total	0	0	0	5	0	14	0	5	1	6	0	0	31	0
Peak Hour	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**2**	**0**	**5**	**0**	**0**	**11**	**0**

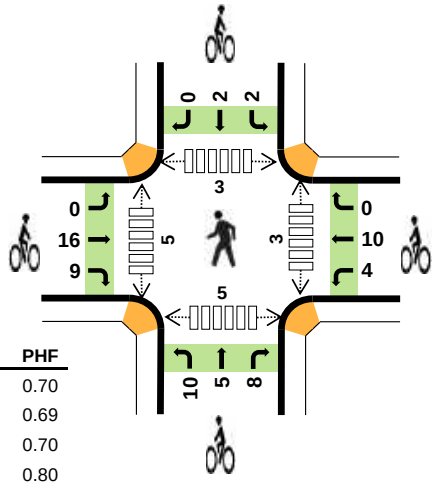
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Glenwood Ave
Laurel St

Date: 04/18/2023
Count Period: 7:00 AM to 10:00 AM
Peak Hour: 7:45 AM to 8:45 AM

Peak Hour





	HV %:	PHF
EB	1.0%	0.70
WB	1.9%	0.69
NB	2.0%	0.70
SB	3.2%	0.80
TOTAL	2.1%	0.73

Three-Hour Count Summaries

Interval Start		Laurel St Eastbound				Laurel St Westbound				Glenwood Ave Northbound				Glenwood Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	3	52	6	0	11	45	1	0	14	15	22	0	1	58	2	230	0
8:00 AM		0	3	56	12	0	16	57	2	0	7	57	25	0	9	72	7	323	0
8:15 AM		0	2	36	6	0	10	26	2	0	4	32	18	0	6	60	9	211	0
8:30 AM		0	1	21	2	0	13	22	1	0	5	31	19	0	0	58	0	173	937
Peak Hour	All	0	9	165	26	0	50	150	6	0	30	135	84	0	16	248	18	937	0
	HV	0	0	1	1	0	0	4	0	0	2	2	1	0	1	8	0	20	0
	HV%	-	0%	1%	4%	-	0%	3%	0%	-	7%	1%	1%	-	6%	3%	0%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	2	3	0	1	*6*	6	10	4	1	*21*	1	1	1	2	*5*
8:00 AM	0	0	1	4	*5*	10	4	12	1	*27*	1	1	0	2	*4*
8:15 AM	0	0	2	2	*4*	9	0	7	1	*17*	0	3	2	1	*6*
8:30 AM	0	1	2	2	*5*	0	0	0	1	*1*	1	0	0	0	*1*
Peak Hour	2	4	5	9	*20*	25	14	23	4	*66*	3	5	3	5	*16*

Three-Hour Count Summaries

Interval Start	Laurel St Eastbound				Laurel St Westbound				Glenwood Ave Northbound				Glenwood Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	3	0	4	4	1	0	4	14	1	0	2	22	0	56	0
7:15 AM	0	0	11	4	0	1	5	1	0	0	17	9	0	2	41	0	91	0
7:30 AM	0	0	21	2	0	9	11	0	0	4	18	8	0	3	44	1	121	0
7:45 AM	**0**	**3**	**52**	**6**	**0**	**11**	**45**	**1**	**0**	**14**	**15**	**22**	**0**	**1**	**58**	**2**	**230**	498
8:00 AM	**0**	**3**	**56**	**12**	**0**	**16**	**57**	**2**	**0**	**7**	**57**	**25**	**0**	**9**	**72**	**7**	**323**	765
8:15 AM	**0**	**2**	**36**	**6**	**0**	**10**	**26**	**2**	**0**	**4**	**32**	**18**	**0**	**6**	**60**	**9**	**211**	885
8:30 AM	**0**	**1**	**21**	**2**	**0**	**13**	**22**	**1**	**0**	**5**	**31**	**19**	**0**	**0**	**58**	**0**	**173**	**937**
8:45 AM	0	0	18	5	0	1	5	1	0	5	23	14	0	3	43	1	119	826
9:00 AM	0	1	17	0	0	4	13	2	0	3	19	12	0	1	48	1	121	624
9:15 AM	0	1	14	4	0	1	19	0	0	4	23	10	0	3	36	2	117	530
9:30 AM	0	3	6	2	0	3	11	0	0	3	24	4	0	4	46	1	107	464
9:45 AM	0	0	7	4	0	5	8	2	0	5	19	11	0	0	29	0	90	435
Count Total	0	14	260	50	0	78	226	13	0	58	292	153	0	34	557	24	1,759	0
Peak Hour All	**0**	**9**	**165**	**26**	**0**	**50**	**150**	**6**	**0**	**30**	**135**	**84**	**0**	**16**	**248**	**18**	**937**	**0**
Peak Hour HV	**0**	**0**	**1**	**1**	**0**	**0**	**4**	**0**	**0**	**2**	**2**	**1**	**0**	**1**	**8**	**0**	**20**	**0**
Peak Hour HV%	**-**	**0%**	**1%**	**4%**	**-**	**0%**	**3%**	**0%**	**-**	**7%**	**1%**	**1%**	**-**	**6%**	**3%**	**0%**	**2%**	**0**

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	2	*2*	0	0	1	1	*2*	0	0	0	0	*0*
7:15 AM	1	0	1	3	*5*	0	0	0	0	*0*	0	0	0	1	*1*
7:30 AM	1	1	1	5	*8*	1	2	1	1	*5*	0	1	0	4	*5*
7:45 AM	**2**	**3**	**0**	**1**	***6***	**6**	**10**	**4**	**1**	***21***	**1**	**1**	**1**	**2**	*5*
8:00 AM	**0**	**0**	**1**	**4**	***5***	**10**	**4**	**12**	**1**	***27***	**1**	**1**	**0**	**2**	*4*
8:15 AM	**0**	**0**	**2**	**2**	***4***	**9**	**0**	**7**	**1**	***17***	**0**	**3**	**2**	**1**	*6*
8:30 AM	**0**	**1**	**2**	**2**	***5***	**0**	**0**	**0**	**1**	***1***	**1**	**0**	**0**	**0**	***1***
8:45 AM	0	1	2	3	*6*	0	1	2	0	*3*	1	0	1	1	*3*
9:00 AM	1	0	3	5	*9*	1	0	2	0	*3*	2	0	0	0	*2*
9:15 AM	2	0	1	2	*5*	0	1	1	0	*2*	1	0	1	1	*3*
9:30 AM	1	0	1	2	*4*	0	0	0	0	*0*	0	0	0	4	*4*
9:45 AM	0	0	4	3	*7*	1	0	0	0	*1*	2	0	0	1	*3*
Count Total	8	6	18	34	*66*	28	18	30	6	*82*	9	6	5	17	*37*
Peak Hour	**2**	**4**	**5**	**9**	***20***	**25**	**14**	**23**	**4**	***66***	**3**	**5**	**3**	**5**	***16***

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Laurel St				Laurel St				Glenwood Ave				Glenwood Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3	0	5	0
7:30 AM	0	0	1	0	0	1	0	0	0	0	1	0	0	0	5	0	8	0
7:45 AM	**0**	**0**	**1**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**6**	21
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**5**	24
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**	**4**	23
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**5**	**20**
8:45 AM	0	0	0	0	0	1	0	0	0	0	1	1	0	0	3	0	6	20
9:00 AM	0	0	1	0	0	0	0	0	0	1	2	0	0	0	5	0	9	24
9:15 AM	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	5	25
9:30 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2	0	4	24
9:45 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	3	0	7	25
Count Total	0	1	4	3	0	2	4	0	0	3	11	4	0	2	32	0	66	0
Peak Hour	**0**	**0**	**1**	**1**	**0**	**0**	**4**	**0**	**0**	**2**	**2**	**1**	**0**	**1**	**8**	**0**	**20**	**0**

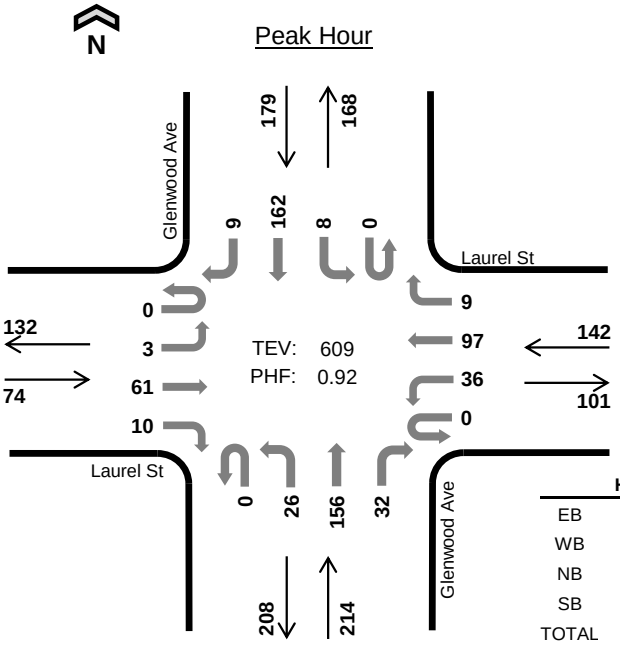
Three-Hour Count Summaries - Bikes

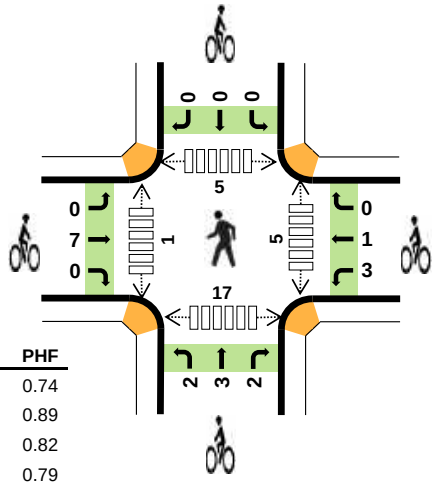
Interval Start	Laurel St			Laurel St			Glenwood Ave			Glenwood Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	1	0	1	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	2	0	0	1	0	0	1	0	5	0
7:45 AM	**0**	**5**	**1**	**4**	**6**	**0**	**3**	**0**	**1**	**0**	**1**	**0**	**21**	28
8:00 AM	**0**	**5**	**5**	**0**	**4**	**0**	**7**	**2**	**3**	**0**	**1**	**0**	**27**	53
8:15 AM	**0**	**6**	**3**	**0**	**0**	**0**	**0**	**3**	**4**	**1**	**0**	**0**	**17**	70
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**66**
8:45 AM	0	0	0	0	1	0	0	1	1	0	0	0	3	48
9:00 AM	0	1	0	0	0	0	0	0	2	0	0	0	3	24
9:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	2	9
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	8
9:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	19	9	4	14	0	10	8	12	2	4	0	82	0
Peak Hour	**0**	**16**	**9**	**4**	**10**	**0**	**10**	**5**	**8**	**2**	**2**	**0**	**66**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Glenwood Ave
Laurel St

Date: 04/18/2023
Count Period: 4:00 PM to 7:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	0.0%	0.74
WB	0.7%	0.89
NB	0.5%	0.82
SB	0.6%	0.79
TOTAL	0.5%	0.92

Three-Hour Count Summaries

Interval Start		Laurel St Eastbound				Laurel St Westbound				Glenwood Ave Northbound				Glenwood Ave Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
5:00 PM		0	1	18	2	0	10	21	0	0	5	33	10	0	1	34	1	136	0
5:15 PM		0	1	22	2	0	7	23	5	0	11	41	13	0	2	37	2	166	0
5:30 PM		0	1	11	1	0	10	28	2	0	5	43	4	0	2	51	4	162	0
5:45 PM		0	0	10	5	0	9	25	2	0	5	39	5	0	3	40	2	145	609
Peak Hour	All	0	3	61	10	0	36	97	9	0	26	156	32	0	8	162	9	609	0
	HV	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	3	0
	HV%	-	0%	0%	0%	-	0%	1%	0%	-	0%	1%	0%	-	0%	0%	11%	0%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:00 PM	0	1	0	0	*1*	2	0	1	0	*3*	0	0	0	4	*4*
5:15 PM	0	0	1	0	*1*	3	3	2	0	*8*	1	1	0	10	*12*
5:30 PM	0	0	0	0	*0*	2	0	2	0	*4*	3	0	3	2	*8*
5:45 PM	0	0	0	1	*1*	0	1	2	0	*3*	1	0	2	1	*4*
Peak Hour	0	1	1	1	*3*	7	4	7	0	*18*	5	1	5	17	*28*

Three-Hour Count Summaries

Interval Start	Laurel St Eastbound				Laurel St Westbound				Glenwood Ave Northbound				Glenwood Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	13	3	0	8	31	1	0	7	38	18	0	3	43	2	169	0
4:15 PM	0	0	9	2	0	12	25	0	0	6	26	9	0	4	39	0	132	0
4:30 PM	0	1	14	6	0	4	21	1	0	3	30	10	0	4	39	4	137	0
4:45 PM	0	0	18	5	0	7	18	0	0	4	35	9	0	3	30	3	132	570
5:00 PM	**0**	**1**	**18**	**2**	**0**	**10**	**21**	**0**	**0**	**5**	**33**	**10**	**0**	**1**	**34**	**1**	**136**	537
5:15 PM	**0**	**1**	**22**	**2**	**0**	**7**	**23**	**5**	**0**	**11**	**41**	**13**	**0**	**2**	**37**	**2**	**166**	571
5:30 PM	**0**	**1**	**11**	**1**	**0**	**10**	**28**	**2**	**0**	**5**	**43**	**4**	**0**	**2**	**51**	**4**	**162**	596
5:45 PM	**0**	**0**	**10**	**5**	**0**	**9**	**25**	**2**	**0**	**5**	**39**	**5**	**0**	**3**	**40**	**2**	**145**	**609**
6:00 PM	0	0	8	1	0	13	14	0	0	3	27	12	0	2	35	0	115	588
6:15 PM	0	1	6	0	0	13	8	0	0	9	32	8	0	0	44	0	121	543
6:30 PM	0	0	4	0	0	9	19	1	0	3	26	3	0	1	28	1	95	476
6:45 PM	0	1	5	3	0	6	9	0	0	2	24	7	0	0	32	0	89	420
Count Total	0	8	138	30	0	108	242	12	0	63	394	108	0	25	452	19	1,599	0
Peak Hour All	**0**	**3**	**61**	**10**	**0**	**36**	**97**	**9**	**0**	**26**	**156**	**32**	**0**	**8**	**162**	**9**	**609**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**3**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**1%**	**0%**	**-**	**0%**	**1%**	**0%**	**-**	**0%**	**0%**	**11%**	**0%**	**0**

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	1	*1*	2	1	2	0	*5*	0	1	1	3	*5*
4:15 PM	0	0	0	1	*1*	1	1	2	1	*5*	0	0	0	4	*4*
4:30 PM	1	0	1	2	*4*	0	2	2	0	*4*	1	3	2	4	*10*
4:45 PM	0	0	1	0	*1*	1	2	3	0	*6*	1	1	1	3	*6*
5:00 PM	**0**	**1**	**0**	**0**	***1***	**2**	**0**	**1**	**0**	***3***	**0**	**0**	**0**	**4**	*4*
5:15 PM	**0**	**0**	**1**	**0**	***1***	**3**	**3**	**2**	**0**	***8***	**1**	**1**	**0**	**10**	*12*
5:30 PM	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**2**	**0**	***4***	**3**	**0**	**3**	**2**	*8*
5:45 PM	**0**	**0**	**0**	**1**	***1***	**0**	**1**	**2**	**0**	***3***	**1**	**0**	**2**	**1**	***4***
6:00 PM	1	0	1	0	*2*	0	2	1	1	*4*	0	0	0	5	*5*
6:15 PM	0	0	1	0	*1*	0	2	1	0	*3*	1	0	3	2	*6*
6:30 PM	0	0	0	0	*0*	1	1	0	1	*3*	0	4	3	3	*10*
6:45 PM	0	0	0	0	*0*	0	0	2	0	*2*	0	0	2	6	*8*
Count Total	2	1	5	5	*13*	12	15	20	3	*50*	8	10	17	47	*82*
Peak Hour	**0**	**1**	**1**	**1**	***3***	**7**	**4**	**7**	**0**	***18***	**5**	**1**	**5**	**17**	***28***

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Laurel St				Laurel St				Glenwood Ave				Glenwood Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0	4	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	7
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	7
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**3**
6:00 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	4
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	1	1	0	0	1	0	0	0	2	3	0	0	4	1	13	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**3**	**0**

Three-Hour Count Summaries - Bikes

Interval Start	Laurel St			Laurel St			Glenwood Ave			Glenwood Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	2	0	0	1	0	2	0	0	0	0	0	5	0
4:15 PM	0	0	1	0	1	0	1	1	0	0	1	0	5	0
4:30 PM	0	0	0	1	1	0	1	1	0	0	0	0	4	0
4:45 PM	0	0	1	0	2	0	2	0	1	0	0	0	6	20
5:00 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	18
5:15 PM	**0**	**3**	**0**	**2**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**8**	21
5:30 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**4**	21
5:45 PM	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**3**	**18**
6:00 PM	0	0	0	0	2	0	1	0	0	0	1	0	4	19
6:15 PM	0	0	0	1	1	0	0	0	1	0	0	0	3	14
6:30 PM	0	1	0	1	0	0	0	0	0	1	0	0	3	13
6:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	2	12
Count Total	0	10	2	6	9	0	10	6	4	1	2	0	50	0
Peak Hour	**0**	**7**	**0**	**3**	**1**	**0**	**2**	**3**	**2**	**0**	**0**	**0**	**18**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Traffic Data Service

San Jose, CA
(408) 622-4787
tdsbay@cs.com

File Name : 12AM FINAL
Site Code : 00000012
Start Date : 3/2/2023
Page No : 1

Groups Printed- Vehicles

	LAUREL ST Southbound					OAK GROVE AVE Westbound					LAUREL ST Northbound					OAK GROVE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	2	2	0	5	4	42	1	1	48	1	3	1	3	8	11	23	1	0	35	96
07:15 AM	5	5	5	2	17	2	50	1	0	53	2	9	8	2	21	10	29	1	0	40	131
07:30 AM	5	9	3	2	19	4	40	3	0	47	1	10	4	1	16	11	30	2	0	43	125
07:45 AM	10	28	23	2	63	16	76	2	0	94	1	35	5	7	48	7	60	3	1	71	276
Total	21	44	33	6	104	26	208	7	1	242	5	57	18	13	93	39	142	7	1	189	628
08:00 AM	15	44	34	4	97	31	92	2	4	129	3	32	13	8	56	7	78	2	1	88	370
08:15 AM	16	45	22	3	86	18	84	5	0	107	3	25	13	7	48	17	90	2	2	111	352
08:30 AM	8	32	8	3	51	7	87	4	1	99	1	15	9	4	29	9	43	3	1	56	235
08:45 AM	5	30	4	4	43	1	74	2	0	77	1	7	9	0	17	18	48	2	3	71	208
Total	44	151	68	14	277	57	337	13	5	412	8	79	44	19	150	51	259	9	7	326	1165
09:00 AM	3	20	5	4	32	3	73	2	0	78	1	24	12	0	37	16	40	1	0	57	204
09:15 AM	5	15	2	0	22	3	76	1	2	82	0	13	10	0	23	11	23	2	3	39	166
09:30 AM	5	9	1	4	19	6	62	3	1	72	2	5	9	1	17	14	44	1	1	60	168
09:45 AM	4	7	4	2	17	7	62	6	0	75	0	7	6	1	14	13	40	2	3	58	164
Total	17	51	12	10	90	19	273	12	3	307	3	49	37	2	91	54	147	6	7	214	702
Grand Total	82	246	113	30	471	102	818	32	9	961	16	185	99	34	334	144	548	22	15	729	2495
Apprch %	17.4	52.2	24	6.4		10.6	85.1	3.3	0.9		4.8	55.4	29.6	10.2		19.8	75.2	3	2.1		
Total %	3.3	9.9	4.5	1.2	18.9	4.1	32.8	1.3	0.4	38.5	0.6	7.4	4	1.4	13.4	5.8	22	0.9	0.6	29.2	

	LAUREL ST Southbound				OAK GROVE AVE Westbound				LAUREL ST Northbound				OAK GROVE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	10	28	23	61	16	76	2	94	1	**35**	5	41	7	60	**3**	70	266
08:00 AM	15	44	**34**	**93**	**31**	**92**	2	**125**	**3**	32	**13**	**48**	7	78	2	87	**353**
08:15 AM	**16**	**45**	22	83	18	84	**5**	107	3	25	13	41	**17**	**90**	2	**109**	340
08:30 AM	8	32	8	48	7	87	4	98	1	15	9	25	9	43	3	55	226
Total Volume	49	149	87	285	72	339	13	424	8	107	40	155	40	271	10	321	1185
% App. Total	17.2	52.3	30.5		17	80	3.1		5.2	69	25.8		12.5	84.4	3.1		
PHF	.766	.828	.640	.766	.581	.921	.650	.848	.667	.764	.769	.807	.588	.753	.833	.736	.839

Traffic Data Service

San Jose, CA
(408) 622-4787
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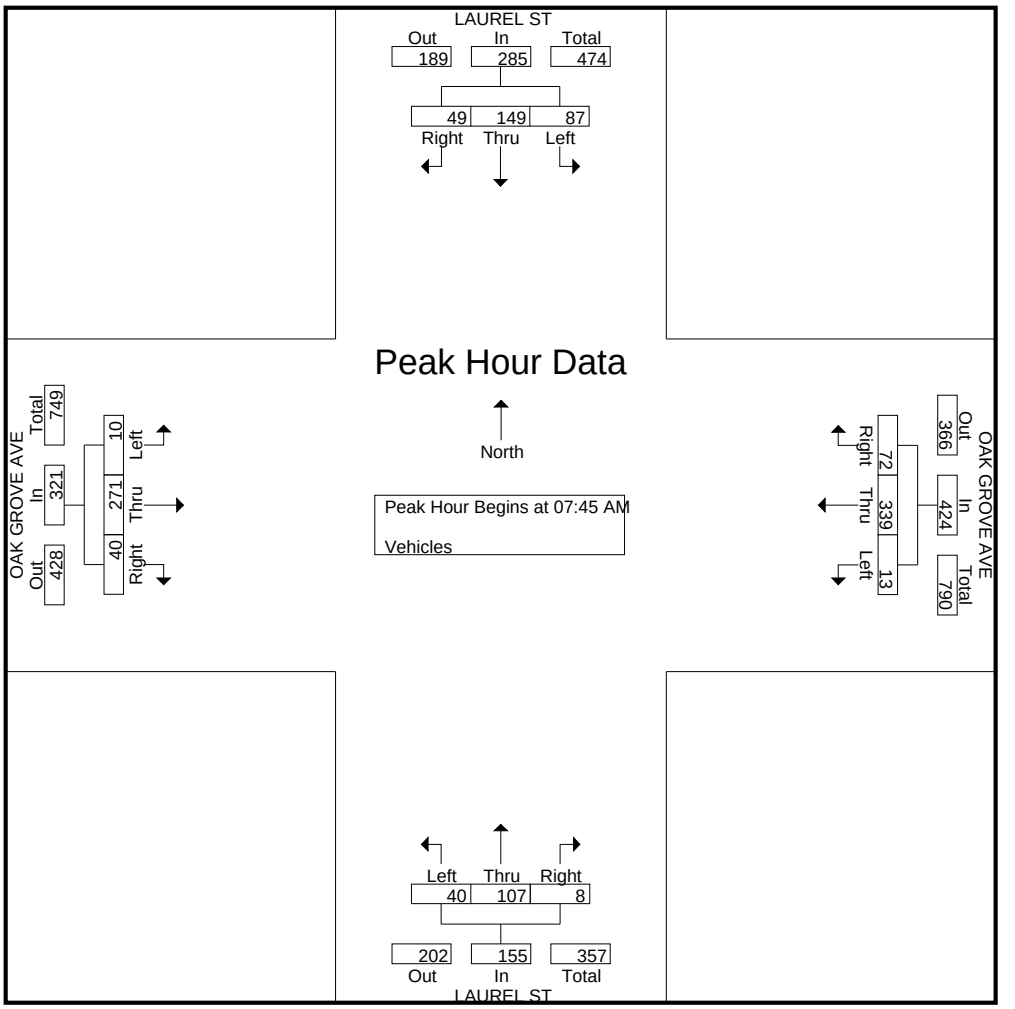
File Name : 12AM FINAL
Site Code : 00000012
Start Date : 3/2/2023
Page No : 2



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tdsbay@cs.com

File Name : 12PM FINAL
Site Code : 00000012
Start Date : 3/2/2023
Page No : 1

Groups Printed- Vehicles

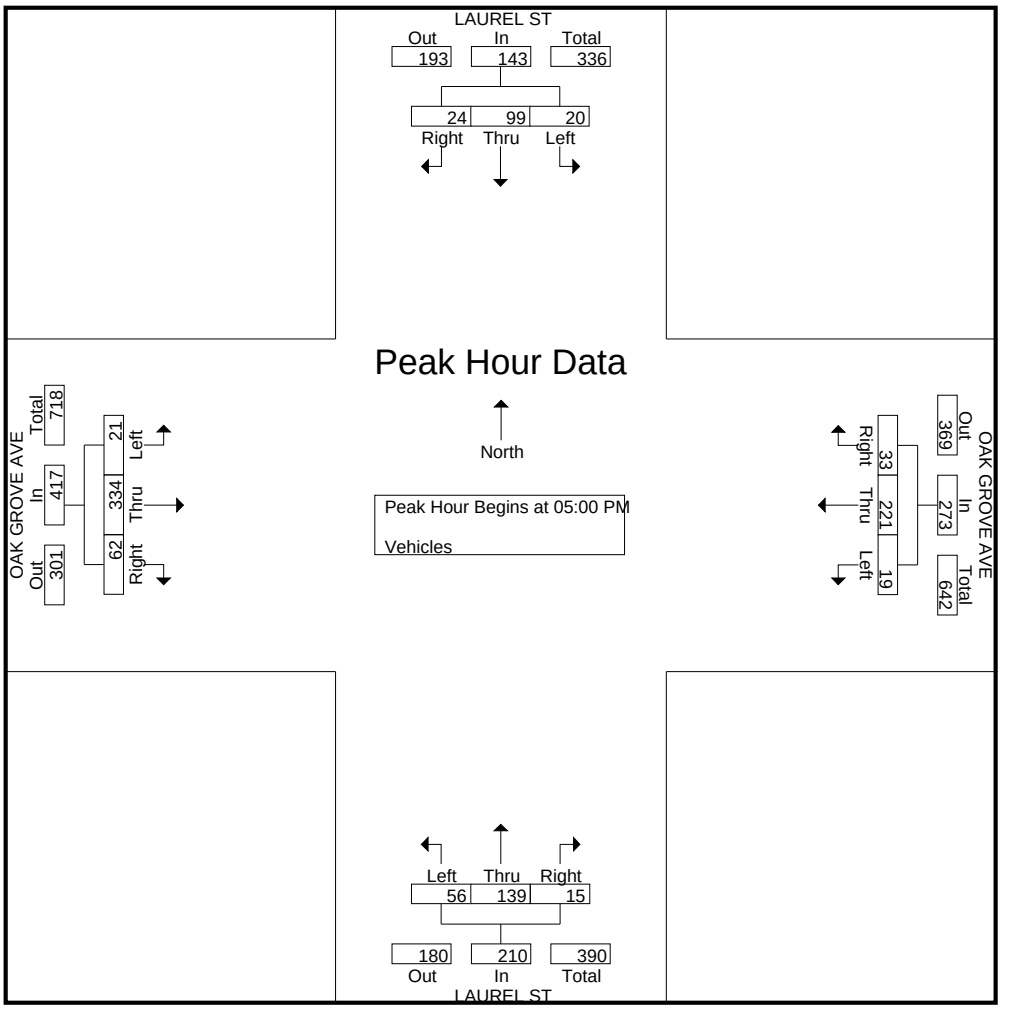
	LAUREL ST Southbound					OAK GROVE AVE Westbound					LAUREL ST Northbound					OAK GROVE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	7	21	6	0	34	4	48	5	0	57	3	43	12	2	60	24	93	8	2	127	278
04:15 PM	4	18	5	0	27	2	65	3	0	70	8	21	16	2	47	17	75	7	0	99	243
04:30 PM	6	17	4	0	27	13	41	3	0	57	4	19	13	3	39	16	61	1	1	79	202
04:45 PM	4	27	2	0	33	6	59	2	1	68	0	28	12	3	43	14	71	2	0	87	231
Total	21	83	17	0	121	25	213	13	1	252	15	111	53	10	189	71	300	18	3	392	954
05:00 PM	6	16	3	1	26	10	54	5	0	69	2	32	9	1	44	16	76	4	0	96	235
05:15 PM	3	40	7	0	50	7	50	5	0	62	8	33	18	3	62	19	95	6	2	122	296
05:30 PM	8	19	3	16	46	9	56	4	3	72	4	45	17	5	71	15	89	7	2	113	302
05:45 PM	7	24	7	0	38	7	61	5	2	75	1	29	12	1	43	12	74	4	0	90	246
Total	24	99	20	17	160	33	221	19	5	278	15	139	56	10	220	62	334	21	4	421	1079
06:00 PM	5	16	4	0	25	9	91	8	0	108	3	8	8	2	21	15	55	8	2	80	234
06:15 PM	6	9	6	1	22	12	62	5	0	79	3	19	9	2	33	19	40	3	2	64	198
06:30 PM	1	4	2	1	8	0	51	0	0	51	2	26	21	0	49	8	42	6	1	57	165
06:45 PM	6	8	1	0	15	1	35	7	1	44	1	15	13	5	34	9	40	5	0	54	147
Total	18	37	13	2	70	22	239	20	1	282	9	68	51	9	137	51	177	22	5	255	744
Grand Total	63	219	50	19	351	80	673	52	7	812	39	318	160	29	546	184	811	61	12	1068	2777
Apprch %	17.9	62.4	14.2	5.4		9.9	82.9	6.4	0.9		7.1	58.2	29.3	5.3		17.2	75.9	5.7	1.1		
Total %	2.3	7.9	1.8	0.7	12.6	2.9	24.2	1.9	0.3	29.2	1.4	11.5	5.8	1	19.7	6.6	29.2	2.2	0.4	38.5	

	LAUREL ST Southbound				OAK GROVE AVE Westbound				LAUREL ST Northbound				OAK GROVE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	6	16	3	25	**10**	54	**5**	69	2	32	9	43	16	76	4	96	233
05:15 PM	3	**40**	**7**	**50**	7	50	5	62	**8**	33	**18**	59	**19**	**95**	6	**120**	**291**
05:30 PM	**8**	19	3	30	9	56	4	69	4	**45**	17	**66**	15	89	**7**	111	276
05:45 PM	7	24	7	38	7	**61**	5	**73**	1	29	12	42	12	74	4	90	243
Total Volume	24	99	20	143	33	221	19	273	15	139	56	210	62	334	21	417	1043
% App. Total	16.8	69.2	14		12.1	81	7		7.1	66.2	26.7		14.9	80.1	5		
PHF	.750	.619	.714	.715	.825	.906	.950	.935	.469	.772	.778	.795	.816	.879	.750	.869	.896

Traffic Data Service

San Jose, CA
(408) 622-4787
tdsbay@cs.com

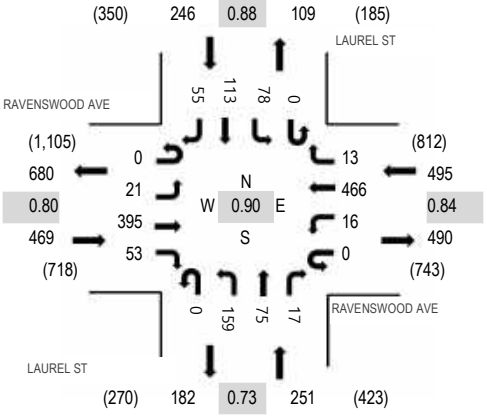
File Name : 12PM FINAL
Site Code : 00000012
Start Date : 3/2/2023
Page No : 2



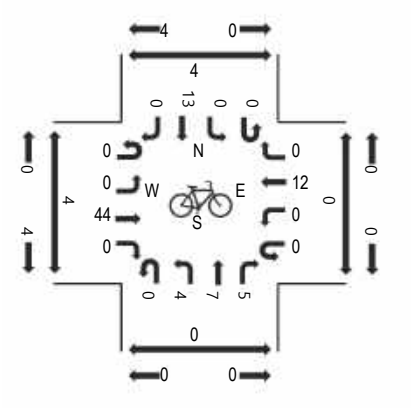
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 7 LAUREL ST & RAVENSWOOD AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

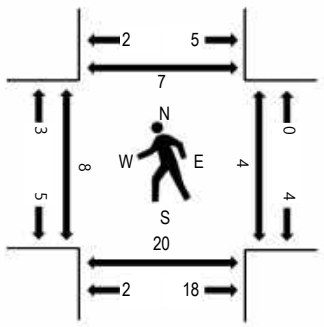
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	32	4	0	2	56	2	0	19	4	6	0	10	7	2	146	842	4	3	0	1
7:15 AM	0	4	42	6	0	2	68	1	0	21	12	2	0	6	6	4	174	1,079	2	1	2	0
7:30 AM	0	2	58	6	0	5	78	0	0	27	14	3	0	12	13	3	221	1,311	2	6	0	2
7:45 AM	0	10	69	14	0	1	100	2	0	41	23	0	0	13	22	6	301	1,410	1	0	1	1
8:00 AM	0	1	116	7	0	5	104	2	0	51	36	2	0	19	30	10	383	1,461	0	1	11	1
8:15 AM	0	5	127	15	0	2	138	7	0	31	18	3	0	18	32	10	406		2	1	3	2
8:30 AM	0	7	71	10	0	3	101	2	0	39	12	5	0	23	28	19	320		5	1	2	2
8:45 AM	0	8	81	21	0	6	123	2	0	38	9	7	0	18	23	16	352		1	1	4	2

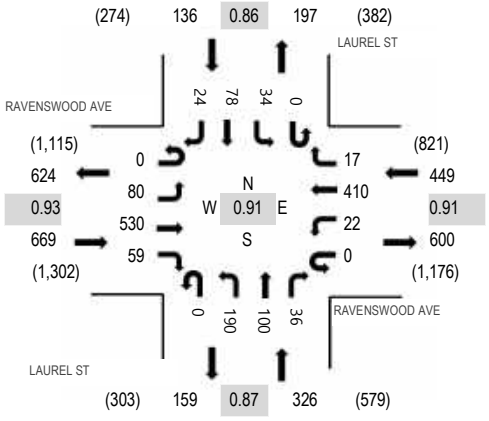
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	6	0	0	0	0	1	0	2	0	0	11
Lights	0	18	380	53	0	16	431	13	0	156	74	15	0	73	110	53	1,392
Mediums	0	3	13	0	0	0	29	0	0	3	1	1	0	3	3	2	58
Total	0	21	395	53	0	16	466	13	0	159	75	17	0	78	113	55	1,461

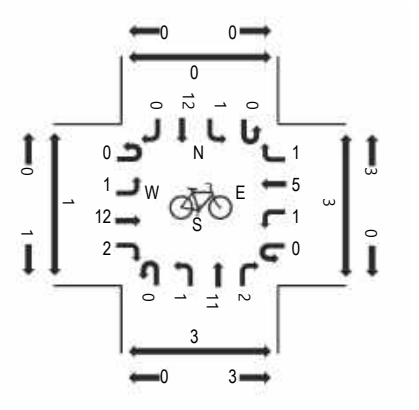
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 7 LAUREL ST & RAVENSWOOD AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

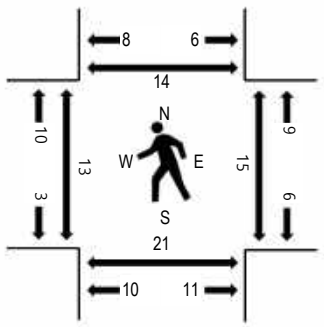
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	20	132	12	0	7	105	4	0	37	40	6	0	12	20	10	405	1,396	5	3	9	3
4:15 PM	0	17	124	7	0	3	81	1	0	25	16	5	0	6	13	5	303	1,384	3	3	3	2
4:30 PM	0	16	124	17	0	4	77	5	0	28	24	5	0	12	15	2	329	1,515	2	2	1	6
4:45 PM	0	20	131	13	0	7	75	3	0	38	19	10	0	9	26	8	359	1,579	4	1	8	3
5:00 PM	0	18	138	11	0	7	99	3	0	48	26	10	0	8	18	7	393	1,580	3	6	5	4
5:15 PM	0	23	138	18	0	5	108	5	0	54	30	10	0	13	20	10	434		3	3	10	5
5:30 PM	0	25	143	19	0	5	89	5	0	48	22	8	0	9	16	4	393		4	2	2	3
5:45 PM	0	14	111	11	0	5	114	4	0	40	22	8	0	4	24	3	360		3	4	4	2

Peak Rolling Hour Flow Rates

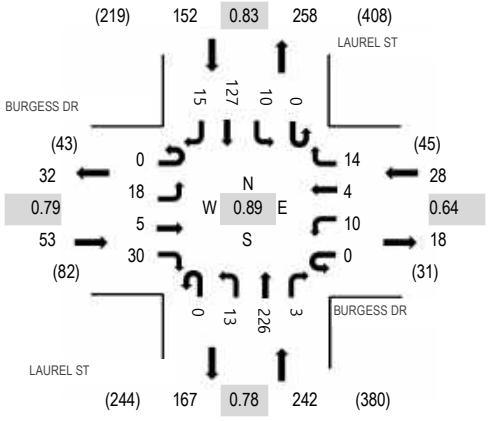
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	80	522	59	0	21	394	17	0	189	100	35	0	30	77	24	1,548
Mediums	0	0	8	0	0	1	15	0	0	1	0	1	0	4	1	0	31
Total	0	80	530	59	0	22	410	17	0	190	100	36	0	34	78	24	1,580

ALL TRAFFIC DATA SERVICES

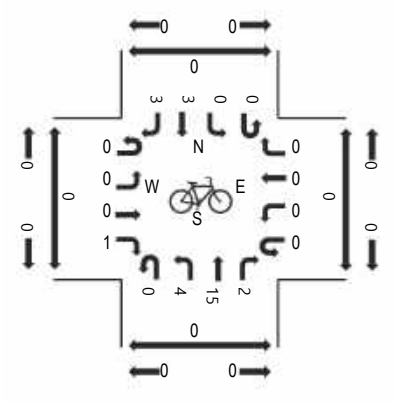
(303) 216-2439
www.alltrafficdata.net

Location: 3 LAUREL ST & BURGESS DR AM
Date: Tuesday, May 2, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

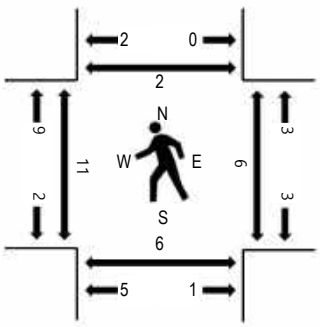
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	BURGESS DR Eastbound				BURGESS DR Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	0	0	0	1	0	3	0	0	7	4	0	2	8	0	26	276	2	0	1	1
7:15 AM	0	0	0	4	0	2	0	1	0	2	26	1	0	3	16	0	55	383	3	0	3	2
7:30 AM	0	5	0	5	0	2	0	3	0	0	49	0	0	0	9	0	73	442	0	3	1	0
7:45 AM	0	7	1	5	0	2	1	5	0	5	74	1	0	2	15	4	122	475	1	3	0	0
8:00 AM	0	3	0	7	0	1	0	3	0	3	68	0	0	4	39	5	133	450	4	1	4	0
8:15 AM	0	2	3	12	0	7	1	3	0	3	45	1	0	0	32	5	114		4	1	1	1
8:30 AM	0	6	1	6	0	0	2	3	0	2	39	1	0	4	41	1	106		2	1	1	1
8:45 AM	0	8	1	5	0	0	2	3	0	5	44	0	0	2	25	2	97		1	0	1	3

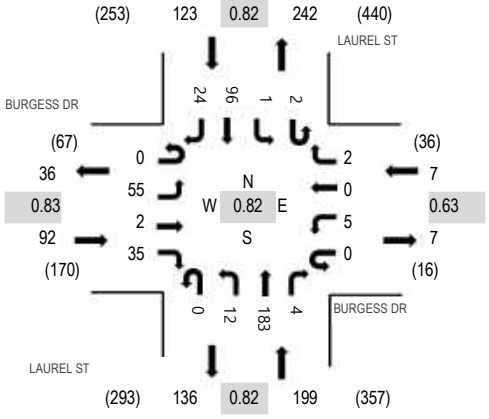
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Lights	0	18	5	28	0	8	3	13	0	11	223	3	0	9	125	15	461
Mediums	0	0	0	2	0	2	1	0	0	2	3	0	0	1	2	0	13
Total	0	18	5	30	0	10	4	14	0	13	226	3	0	10	127	15	475

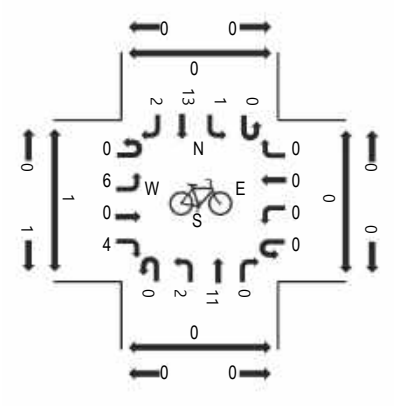
(303) 216-2439
www.alltrafficdata.net

Location: 3 LAUREL ST & BURGESS DR PM
Date: Tuesday, May 2, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

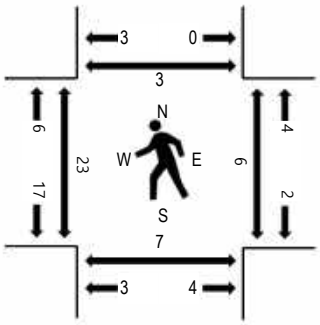
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	BURGESS DR Eastbound				BURGESS DR Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	17	1	11	0	3	0	4	0	2	37	1	0	2	28	6	112	396	2	2	1	3
4:15 PM	0	10	1	8	0	8	0	4	0	0	34	0	1	1	28	2	97	372	2	1	4	0
4:30 PM	0	8	0	8	0	4	0	5	0	9	38	3	0	0	24	6	105	403	4	2	1	0
4:45 PM	0	6	1	6	0	1	0	1	0	4	42	1	1	0	14	5	82	421	6	1	1	2
5:00 PM	0	13	1	10	0	1	0	0	0	0	38	0	0	0	19	6	88	420	7	1	2	0
5:15 PM	0	18	0	10	0	2	0	0	0	6	53	2	1	1	27	8	128		1	1	2	1
5:30 PM	0	18	0	9	0	1	0	1	0	2	50	1	0	0	36	5	123		9	3	2	0
5:45 PM	0	7	0	7	0	1	0	0	0	1	33	0	0	0	27	5	81		4	4	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	55	2	35	0	5	0	2	0	12	182	4	2	1	96	23	419
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Total	0	55	2	35	0	5	0	2	0	12	183	4	2	1	96	24	421

Traffic Data Service

San Jose, CA
(408) 622-4787
tdsbay@cs.com

File Name : 24AM FINAL
Site Code : 00000024
Start Date : 3/2/2023
Page No : 1

Groups Printed- Vehicles

	EL CAMINO REAL Southbound					ENCINAL AVE Westbound					EL CAMINO REAL Northbound					DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	170	5	0	178	8	1	12	4	25	7	89	4	0	100	0	2	0	0	2	305
07:15 AM	2	242	12	4	260	17	0	12	0	29	12	103	2	0	117	0	1	1	0	2	408
07:30 AM	4	300	25	0	329	19	0	20	0	39	26	150	4	0	180	1	2	0	0	3	551
07:45 AM	12	373	44	1	430	41	1	27	0	69	30	162	2	0	194	0	10	0	1	11	704
Total	21	1085	86	5	1197	85	2	71	4	162	75	504	12	0	591	1	15	1	1	18	1968
08:00 AM	7	362	37	2	408	71	3	44	1	119	31	205	6	0	242	5	2	0	0	7	776
08:15 AM	3	377	31	2	413	49	3	28	0	80	24	249	5	0	278	0	2	2	1	5	776
08:30 AM	4	354	35	2	395	27	3	18	1	49	41	212	6	0	259	3	2	2	1	8	711
08:45 AM	6	357	36	3	402	21	2	21	1	45	30	215	9	0	254	1	1	0	0	2	703
Total	20	1450	139	9	1618	168	11	111	3	293	126	881	26	0	1033	9	7	4	2	22	2966
09:00 AM	4	274	21	2	301	26	4	16	2	48	24	184	11	0	219	0	1	2	0	3	571
09:15 AM	9	267	15	1	292	27	12	19	0	58	22	191	13	0	226	1	2	2	0	5	581
09:30 AM	16	243	15	0	274	15	7	24	4	50	14	193	14	0	221	1	1	4	0	6	551
09:45 AM	1	260	17	0	278	21	4	24	1	50	9	199	5	0	213	4	0	2	1	7	548
Total	30	1044	68	3	1145	89	27	83	7	206	69	767	43	0	879	6	4	10	1	21	2251
Grand Total	71	3579	293	17	3960	342	40	265	14	661	270	2152	81	0	2503	16	26	15	4	61	7185
Apprch %	1.8	90.4	7.4	0.4		51.7	6.1	40.1	2.1		10.8	86	3.2	0		26.2	42.6	24.6	6.6		
Total %	1	49.8	4.1	0.2	55.1	4.8	0.6	3.7	0.2	9.2	3.8	30	1.1	0	34.8	0.2	0.4	0.2	0.1	0.8	

	EL CAMINO REAL Southbound				ENCINAL AVE Westbound				EL CAMINO REAL Northbound				DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**12**	373	**44**	**429**	41	1	27	69	30	162	2	194	0	**10**	0	**10**	702
08:00 AM	7	362	37	406	**71**	**3**	**44**	**118**	31	205	**6**	242	**5**	2	0	7	**773**
08:15 AM	3	**377**	31	411	49	3	28	80	24	**249**	5	**278**	0	2	**2**	4	773
08:30 AM	4	354	35	393	27	3	18	48	**41**	212	6	259	3	2	2	7	707
Total Volume	26	1466	147	1639	188	10	117	315	126	828	19	973	8	16	4	28	2955
% App. Total	1.6	89.4	9		59.7	3.2	37.1		12.9	85.1	2		28.6	57.1	14.3		
PHF	.542	.972	.835	.955	.662	.833	.665	.667	.768	.831	.792	.875	.400	.400	.500	.700	.956

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File Name : 24AM FINAL
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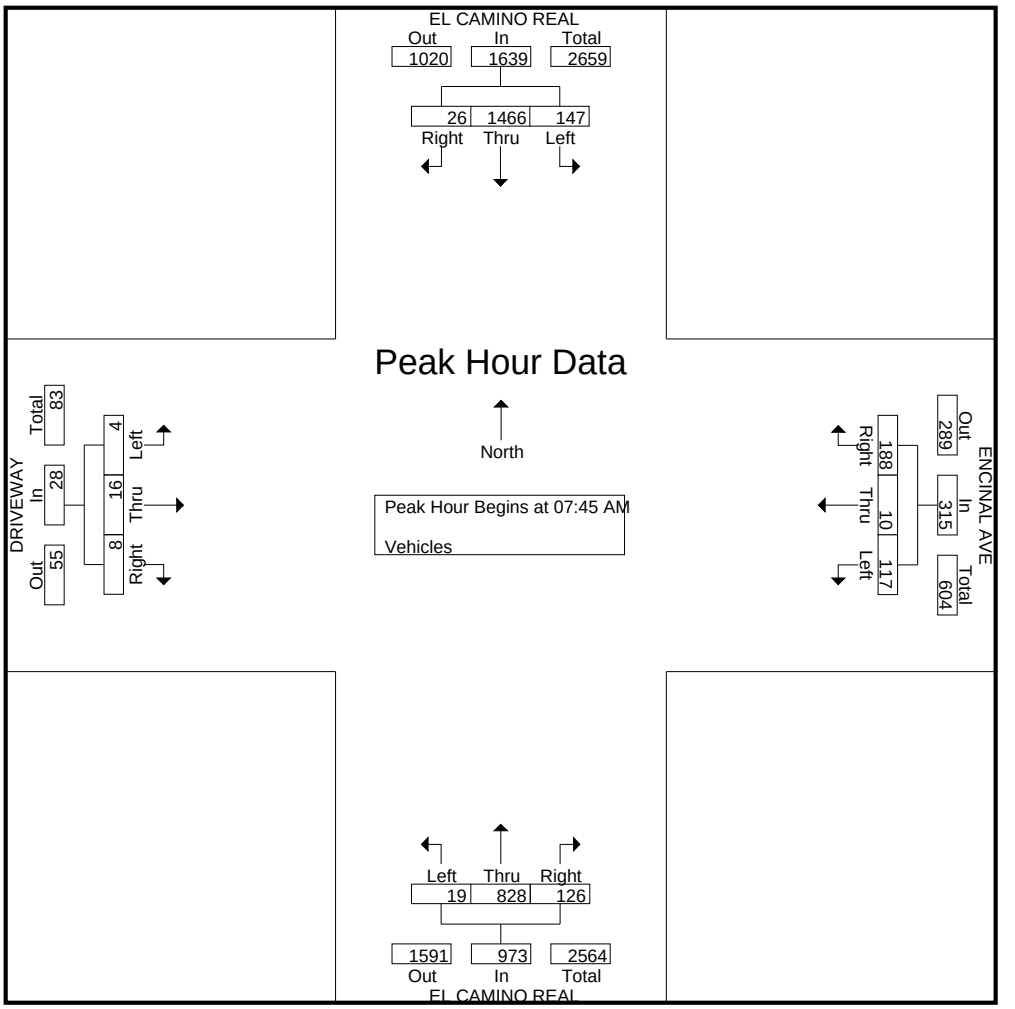

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File Name : 24PM FINAL
Site Code : 00000024
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					ENCINAL AVE Westbound					EL CAMINO REAL Northbound					DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	8	242	26	2	278	41	1	29	3	74	33	312	11	0	356	3	3	4	1	11	719
04:15 PM	2	215	19	1	237	27	1	27	5	60	31	341	6	0	378	3	2	6	1	12	687
04:30 PM	2	207	15	2	226	48	1	20	1	70	34	375	9	0	418	5	4	5	0	14	728
04:45 PM	4	244	22	3	273	39	2	28	6	75	27	387	12	0	426	11	3	5	1	20	794
Total	16	908	82	8	1014	155	5	104	15	279	125	1415	38	0	1578	22	12	20	3	57	2928
05:00 PM	2	223	26	4	255	44	0	29	2	75	26	334	7	0	367	16	7	5	0	28	725
05:15 PM	2	249	31	3	285	42	0	36	6	84	31	346	8	0	385	6	2	2	0	10	764
05:30 PM	2	233	24	0	259	63	1	22	2	88	28	353	2	0	383	0	1	4	0	5	735
05:45 PM	1	239	21	3	264	27	1	35	3	66	28	353	3	0	384	3	1	2	0	6	720
Total	7	944	102	10	1063	176	2	122	13	313	113	1386	20	0	1519	25	11	13	0	49	2944
06:00 PM	1	228	12	1	242	41	3	31	4	79	20	344	7	0	371	1	1	2	0	4	696
06:15 PM	2	224	11	3	240	28	0	21	0	49	15	321	3	0	339	1	1	3	0	5	633
06:30 PM	3	196	14	2	215	21	0	20	0	41	13	318	1	0	332	3	1	2	0	6	594
06:45 PM	2	185	10	4	201	19	1	20	3	43	14	262	4	0	280	2	1	4	0	7	531
Total	8	833	47	10	898	109	4	92	7	212	62	1245	15	0	1322	7	4	11	0	22	2454
Grand Total	31	2685	231	28	2975	440	11	318	35	804	300	4046	73	0	4419	54	27	44	3	128	8326
Apprch %	1	90.3	7.8	0.9		54.7	1.4	39.6	4.4		6.8	91.6	1.7	0		42.2	21.1	34.4	2.3		
Total %	0.4	32.2	2.8	0.3	35.7	5.3	0.1	3.8	0.4	9.7	3.6	48.6	0.9	0	53.1	0.6	0.3	0.5	0	1.5	

	EL CAMINO REAL Southbound				ENCINAL AVE Westbound				EL CAMINO REAL Northbound				DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**4**	244	22	270	39	**2**	28	69	27	**387**	**12**	**426**	11	3	**5**	19	**784**
05:00 PM	2	223	26	251	44	0	29	73	26	334	7	367	**16**	**7**	5	**28**	719
05:15 PM	2	**249**	**31**	**282**	42	0	**36**	78	**31**	346	8	385	6	2	2	10	755
05:30 PM	2	233	24	259	**63**	1	22	**86**	28	353	2	383	0	1	4	5	733
Total Volume	10	949	103	1062	188	3	115	306	112	1420	29	1561	33	13	16	62	2991
% App. Total	0.9	89.4	9.7		61.4	1	37.6		7.2	91	1.9		53.2	21	25.8		
PHF	.625	.953	.831	.941	.746	.375	.799	.890	.903	.917	.604	.916	.516	.464	.800	.554	.954

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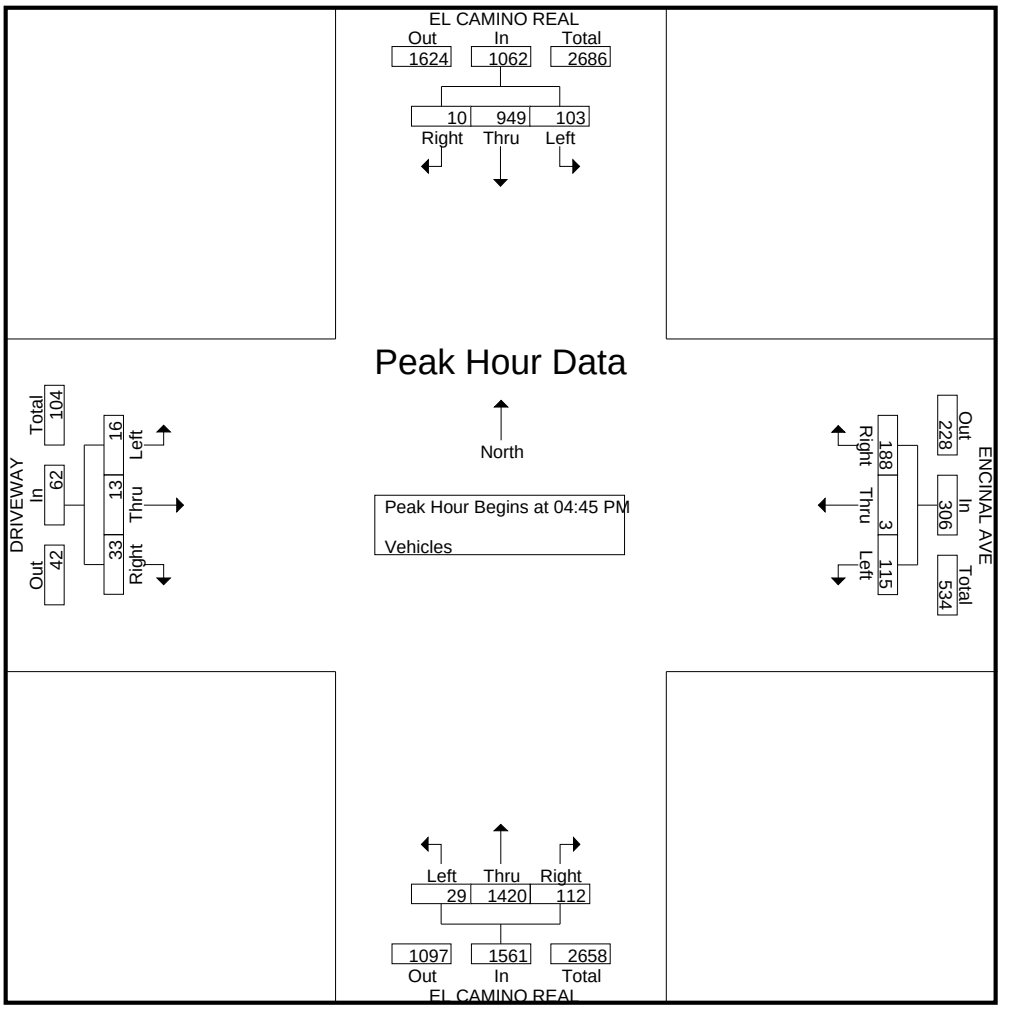

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File Name : 25AM FINAL
Site Code : 00000025
Start Date : 3/2/2023
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					GLENWOOD AVE Westbound					EL CAMINO REAL Northbound					VALPARAISO AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	21	135	2	2	160	1	16	4	2	23	4	68	8	1	81	4	9	26	0	39	303
07:15 AM	36	192	8	0	236	2	25	7	3	37	6	100	16	3	125	24	16	30	0	70	468
07:30 AM	51	188	9	0	248	9	34	9	3	55	6	122	19	1	148	11	13	37	0	61	512
07:45 AM	55	256	24	1	336	10	61	7	2	80	8	138	21	5	172	14	24	50	0	88	676
Total	163	771	43	3	980	22	136	27	10	195	24	428	64	10	526	53	62	143	0	258	1959
08:00 AM	46	257	32	13	348	7	62	10	4	83	14	181	21	0	216	16	44	59	0	119	766
08:15 AM	49	278	13	1	341	10	62	22	3	97	6	197	44	5	252	23	42	48	1	114	804
08:30 AM	38	223	23	3	287	11	62	12	2	87	10	169	31	1	211	26	20	81	0	127	712
08:45 AM	66	257	21	0	344	9	32	5	2	48	7	186	15	0	208	26	26	55	0	107	707
Total	199	1015	89	17	1320	37	218	49	11	315	37	733	111	6	887	91	132	243	1	467	2989
09:00 AM	55	225	9	1	290	10	33	10	5	58	5	183	13	6	207	11	27	36	0	74	629
09:15 AM	43	216	10	3	272	7	32	5	4	48	17	185	20	3	225	15	15	44	0	74	619
09:30 AM	38	185	17	0	240	8	19	16	5	48	6	166	25	1	198	13	22	43	0	78	564
09:45 AM	47	202	10	0	259	10	28	8	0	46	11	170	16	2	199	18	21	42	0	81	585
Total	183	828	46	4	1061	35	112	39	14	200	39	704	74	12	829	57	85	165	0	307	2397
Grand Total	545	2614	178	24	3361	94	466	115	35	710	100	1865	249	28	2242	201	279	551	1	1032	7345
Apprch %	16.2	77.8	5.3	0.7		13.2	65.6	16.2	4.9		4.5	83.2	11.1	1.2		19.5	27	53.4	0.1		
Total %	7.4	35.6	2.4	0.3	45.8	1.3	6.3	1.6	0.5	9.7	1.4	25.4	3.4	0.4	30.5	2.7	3.8	7.5	0	14.1	

	EL CAMINO REAL Southbound				GLENWOOD AVE Westbound				EL CAMINO REAL Northbound				VALPARAISO AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	46	257	**32**	335	7	**62**	10	79	**14**	181	21	216	16	**44**	59	119	749
08:15 AM	49	**278**	13	340	10	62	**22**	**94**	6	**197**	**44**	**247**	23	42	48	113	**794**
08:30 AM	38	223	23	284	**11**	62	12	85	10	169	31	210	**26**	20	**81**	**127**	706
08:45 AM	**66**	257	21	**344**	9	32	5	46	7	186	15	208	26	26	55	107	705
Total Volume	199	1015	89	1303	37	218	49	304	37	733	111	881	91	132	243	466	2954
% App. Total	15.3	77.9	6.8		12.2	71.7	16.1		4.2	83.2	12.6		19.5	28.3	52.1		
PHF	.754	.913	.695	.947	.841	.879	.557	.809	.661	.930	.631	.892	.875	.750	.750	.917	.930

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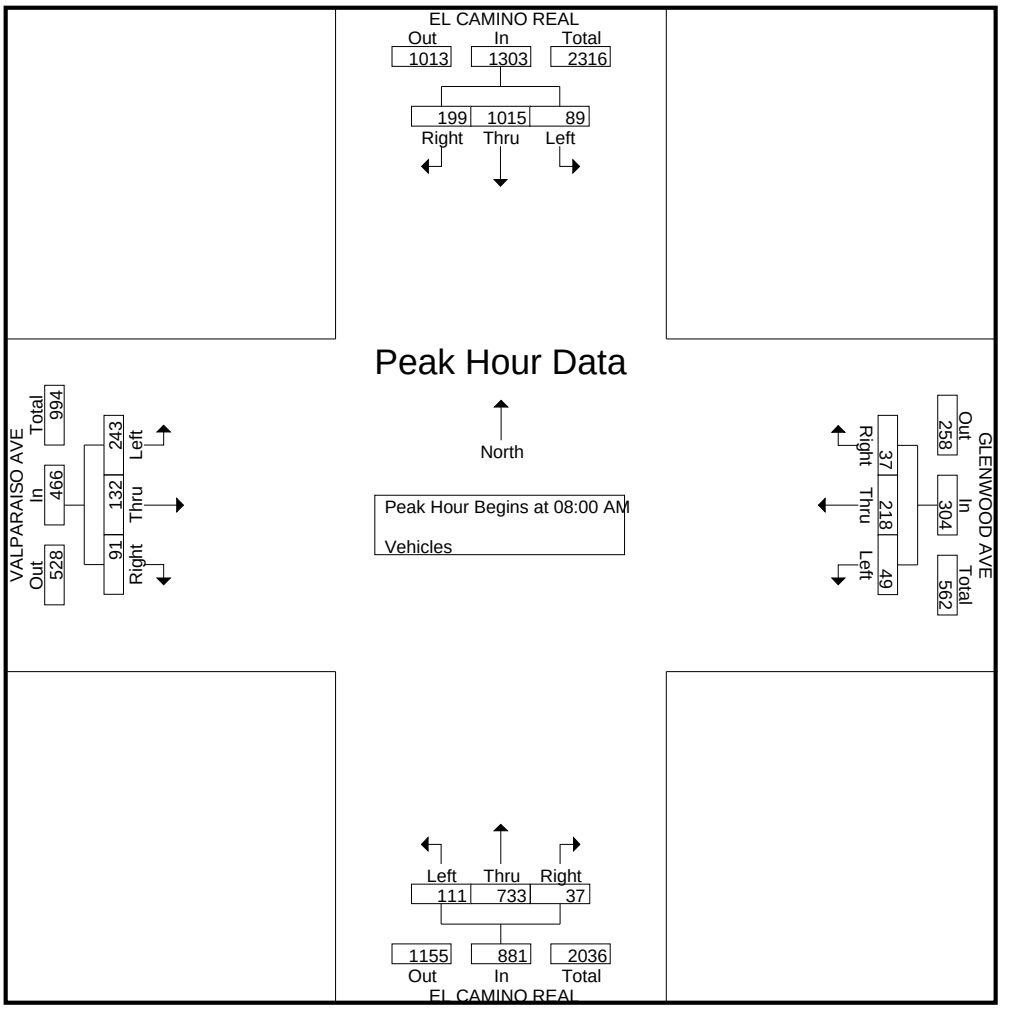

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File Name : 25PM FINAL
Site Code : 00000025
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					GLENWOOD AVE Westbound					EL CAMINO REAL Northbound					VALPARAISO AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	27	226	14	0	267	5	48	10	5	68	8	316	28	2	354	14	29	53	1	97	786
04:15 PM	22	195	12	3	232	12	37	8	5	62	14	311	23	4	352	20	43	60	1	124	770
04:30 PM	24	189	11	1	225	5	26	8	7	46	16	323	26	4	369	13	40	81	0	134	774
04:45 PM	43	210	9	2	264	8	55	7	6	76	12	353	34	1	400	29	29	61	2	121	861
Total	116	820	46	6	988	30	166	33	23	252	50	1303	111	11	1475	76	141	255	4	476	3191
05:00 PM	24	199	6	1	230	13	50	11	4	78	11	293	34	1	339	25	30	71	0	126	773
05:15 PM	26	218	15	1	260	15	28	7	5	55	11	345	17	0	373	20	40	63	0	123	811
05:30 PM	26	200	8	1	235	7	47	12	2	68	14	346	35	3	398	25	35	50	0	110	811
05:45 PM	25	210	15	1	251	10	47	11	6	74	16	322	28	0	366	25	40	53	0	118	809
Total	101	827	44	4	976	45	172	41	17	275	52	1306	114	4	1476	95	145	237	0	477	3204
06:00 PM	31	208	16	2	257	6	34	7	2	49	10	318	21	0	349	19	27	48	0	94	749
06:15 PM	43	186	5	3	237	8	36	5	4	53	12	293	19	2	326	20	25	46	0	91	707
06:30 PM	33	162	6	0	201	11	30	11	1	53	12	250	31	0	293	16	16	32	0	64	611
06:45 PM	36	164	5	1	206	11	26	6	5	48	11	255	18	0	284	16	21	21	0	58	596
Total	143	720	32	6	901	36	126	29	12	203	45	1116	89	2	1252	71	89	147	0	307	2663
Grand Total	360	2367	122	16	2865	111	464	103	52	730	147	3725	314	17	4203	242	375	639	4	1260	9058
Apprch %	12.6	82.6	4.3	0.6		15.2	63.6	14.1	7.1		3.5	88.6	7.5	0.4		19.2	29.8	50.7	0.3		
Total %	4	26.1	1.3	0.2	31.6	1.2	5.1	1.1	0.6	8.1	1.6	41.1	3.5	0.2	46.4	2.7	4.1	7.1	0	13.9	

	EL CAMINO REAL Southbound				GLENWOOD AVE Westbound				EL CAMINO REAL Northbound				VALPARAISO AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**43**	210	9	**262**	8	**55**	7	70	12	**353**	34	**399**	**29**	29	61	119	**850**
05:00 PM	24	199	6	229	13	50	11	**74**	11	293	34	338	25	30	**71**	**126**	767
05:15 PM	26	**218**	**15**	259	**15**	28	7	50	11	345	17	373	20	**40**	63	123	805
05:30 PM	26	200	8	234	7	47	**12**	66	**14**	346	**35**	395	25	35	50	110	805
Total Volume	119	827	38	984	43	180	37	260	48	1337	120	1505	99	134	245	478	3227
% App. Total	12.1	84	3.9		16.5	69.2	14.2		3.2	88.8	8		20.7	28	51.3		
PHF	.692	.948	.633	.939	.717	.818	.771	.878	.857	.947	.857	.943	.853	.838	.863	.948	.949

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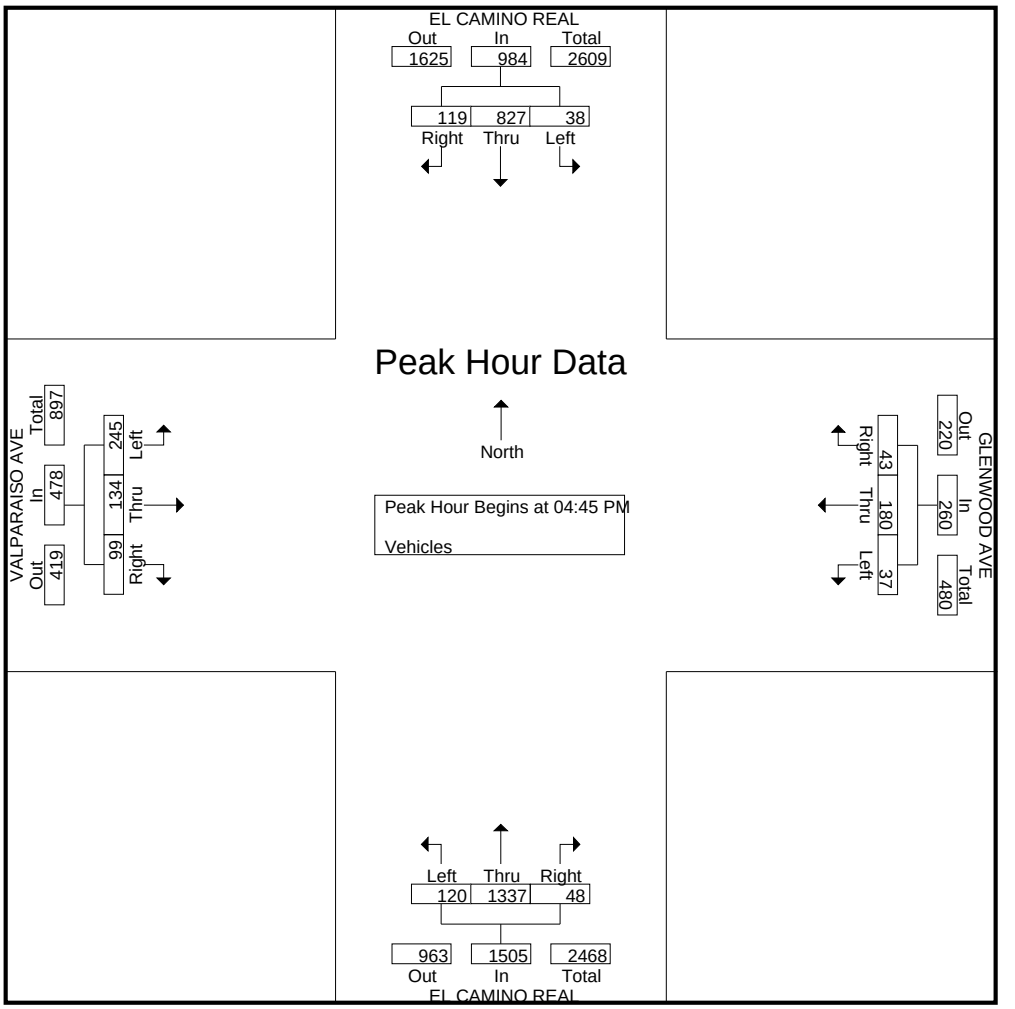

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File Name : 26AM FINAL
Site Code : 00000026
Start Date : 3/2/2023
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					OAK GROVE AVE Westbound					EL CAMINO REAL Northbound					OAK GROVE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	8	129	4	3	144	9	28	6	0	43	5	68	8	1	82	2	19	7	1	29	298
07:15 AM	3	194	24	3	224	5	29	8	1	43	12	106	8	4	130	6	17	8	2	33	430
07:30 AM	17	204	19	9	249	8	36	8	3	55	1	129	8	5	143	6	24	10	1	41	488
07:45 AM	21	244	27	4	296	8	48	11	4	71	14	158	12	8	192	12	39	19	2	72	631
Total	49	771	74	19	913	30	141	33	8	212	32	461	36	18	547	26	99	44	6	175	1847
08:00 AM	18	209	28	5	260	15	82	19	4	120	21	182	25	3	231	12	62	29	0	103	714
08:15 AM	21	246	29	4	300	9	62	31	1	103	21	196	28	8	253	15	65	21	5	106	762
08:30 AM	24	214	30	5	273	14	73	22	3	112	18	163	33	6	220	14	42	24	1	81	686
08:45 AM	24	225	24	1	274	6	54	21	4	85	13	176	22	3	214	17	50	23	0	90	663
Total	87	894	111	15	1107	44	271	93	12	420	73	717	108	20	918	58	219	97	6	380	2825
09:00 AM	16	274	19	3	312	9	42	23	3	77	9	183	27	7	226	11	35	21	1	68	683
09:15 AM	7	183	21	2	213	13	39	25	5	82	13	189	23	4	229	20	23	21	5	69	593
09:30 AM	12	173	14	4	203	14	38	16	2	70	22	143	18	3	186	18	31	30	3	82	541
09:45 AM	19	214	19	7	259	15	44	22	8	89	19	171	23	8	221	18	25	22	2	67	636
Total	54	844	73	16	987	51	163	86	18	318	63	686	91	22	862	67	114	94	11	286	2453
Grand Total	190	2509	258	50	3007	125	575	212	38	950	168	1864	235	60	2327	151	432	235	23	841	7125
Apprch %	6.3	83.4	8.6	1.7		13.2	60.5	22.3	4		7.2	80.1	10.1	2.6		18	51.4	27.9	2.7		
Total %	2.7	35.2	3.6	0.7	42.2	1.8	8.1	3	0.5	13.3	2.4	26.2	3.3	0.8	32.7	2.1	6.1	3.3	0.3	11.8	

	EL CAMINO REAL Southbound				OAK GROVE AVE Westbound				EL CAMINO REAL Northbound				OAK GROVE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	18	209	28	255	**15**	**82**	19	**116**	**21**	182	25	228	12	62	**29**	**103**	702
08:15 AM	21	**246**	29	**296**	9	62	**31**	102	21	**196**	28	**245**	15	**65**	21	101	**744**
08:30 AM	**24**	214	**30**	268	14	73	22	109	18	163	**33**	214	14	42	24	80	671
08:45 AM	24	225	24	273	6	54	21	81	13	176	22	211	**17**	50	23	90	655
Total Volume	87	894	111	1092	44	271	93	408	73	717	108	898	58	219	97	374	2772
% App. Total	8	81.9	10.2		10.8	66.4	22.8		8.1	79.8	12		15.5	58.6	25.9		
PHF	.906	.909	.925	.922	.733	.826	.750	.879	.869	.915	.818	.916	.853	.842	.836	.908	.931

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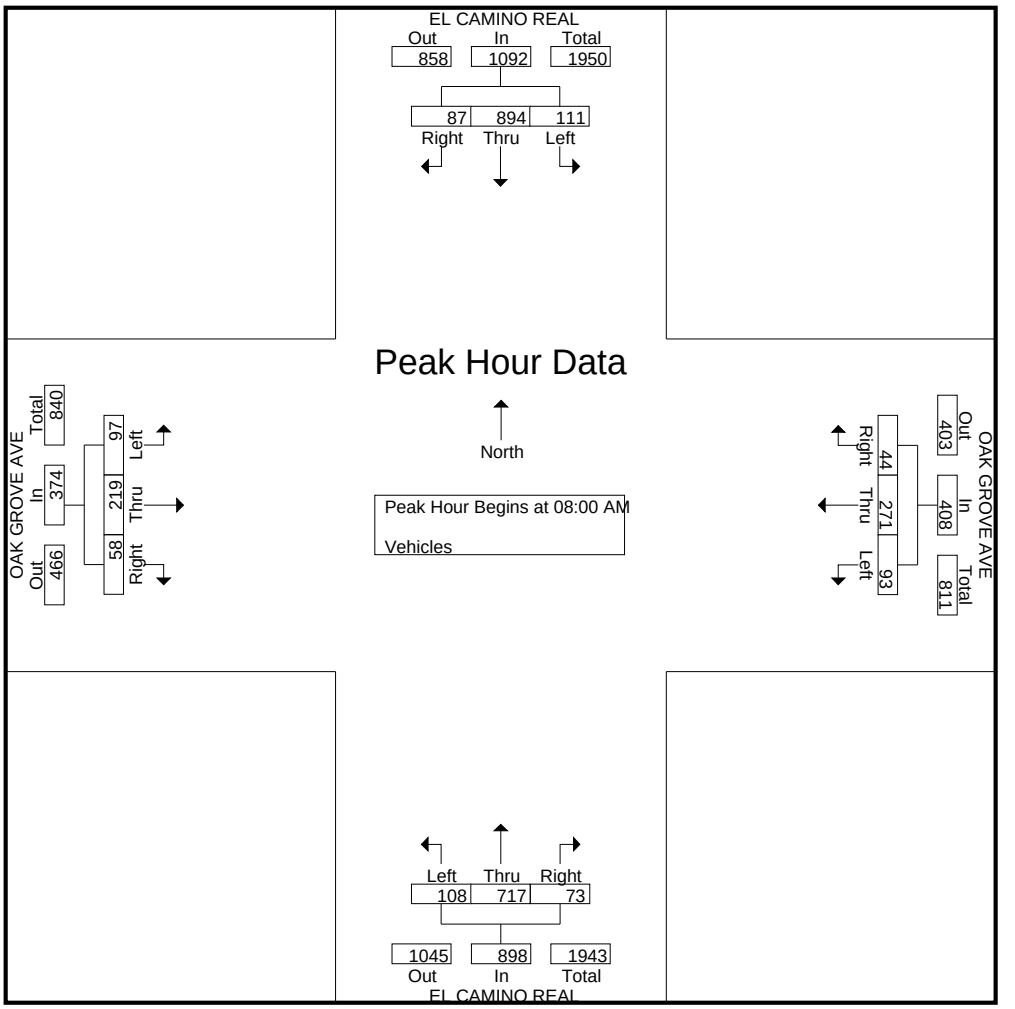

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File Name : 26PM FINAL
Site Code : 00000026
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					OAK GROVE AVE Westbound					EL CAMINO REAL Northbound					OAK GROVE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	25	174	12	5	216	13	25	23	8	69	50	302	28	4	384	26	59	37	5	127	796
04:15 PM	12	187	18	1	218	14	45	20	2	81	25	317	22	9	373	31	59	28	0	118	790
04:30 PM	20	164	15	7	206	11	38	24	3	76	23	312	24	4	363	17	65	24	3	109	754
04:45 PM	13	217	12	3	245	13	32	22	5	72	20	354	21	5	400	34	44	27	5	110	827
Total	70	742	57	16	885	51	140	89	18	298	118	1285	95	22	1520	108	227	116	13	464	3167
05:00 PM	22	227	20	7	276	14	41	19	7	81	20	294	17	7	338	23	60	27	6	116	811
05:15 PM	8	205	23	0	236	16	37	26	0	79	37	334	17	9	397	19	73	34	4	130	842
05:30 PM	7	209	14	4	234	10	42	28	11	91	19	335	22	6	382	35	52	27	4	118	825
05:45 PM	13	232	21	4	270	11	49	20	3	83	23	306	18	7	354	30	54	33	2	119	826
Total	50	873	78	15	1016	51	169	93	21	334	99	1269	74	29	1471	107	239	121	16	483	3304
06:00 PM	22	177	15	6	220	12	43	37	5	97	24	319	22	2	367	18	32	32	3	85	769
06:15 PM	14	207	20	7	248	9	45	20	5	79	29	289	14	3	335	16	24	22	6	68	730
06:30 PM	10	172	12	3	197	13	36	23	1	73	18	250	14	1	283	17	33	20	0	70	623
06:45 PM	7	160	17	0	184	9	23	24	7	63	28	251	15	4	298	8	26	16	0	50	595
Total	53	716	64	16	849	43	147	104	18	312	99	1109	65	10	1283	59	115	90	9	273	2717
Grand Total	173	2331	199	47	2750	145	456	286	57	944	316	3663	234	61	4274	274	581	327	38	1220	9188
Apprch %	6.3	84.8	7.2	1.7		15.4	48.3	30.3	6		7.4	85.7	5.5	1.4		22.5	47.6	26.8	3.1		
Total %	1.9	25.4	2.2	0.5	29.9	1.6	5	3.1	0.6	10.3	3.4	39.9	2.5	0.7	46.5	3	6.3	3.6	0.4	13.3	

	EL CAMINO REAL Southbound				OAK GROVE AVE Westbound				EL CAMINO REAL Northbound				OAK GROVE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**22**	227	20	**269**	14	41	19	74	20	294	17	331	23	60	27	110	784
05:15 PM	8	205	**23**	236	**16**	37	26	79	**37**	334	17	**388**	19	**73**	**34**	**126**	**829**
05:30 PM	7	209	14	230	10	42	**28**	**80**	19	**335**	**22**	376	**35**	52	27	114	800
05:45 PM	13	**232**	21	266	11	**49**	20	80	23	306	18	347	30	54	33	117	810
Total Volume	50	873	78	1001	51	169	93	313	99	1269	74	1442	107	239	121	467	3223
% App. Total	5	87.2	7.8		16.3	54	29.7		6.9	88	5.1		22.9	51.2	25.9		
PHF	.568	.941	.848	.930	.797	.862	.830	.978	.669	.947	.841	.929	.764	.818	.890	.927	.972

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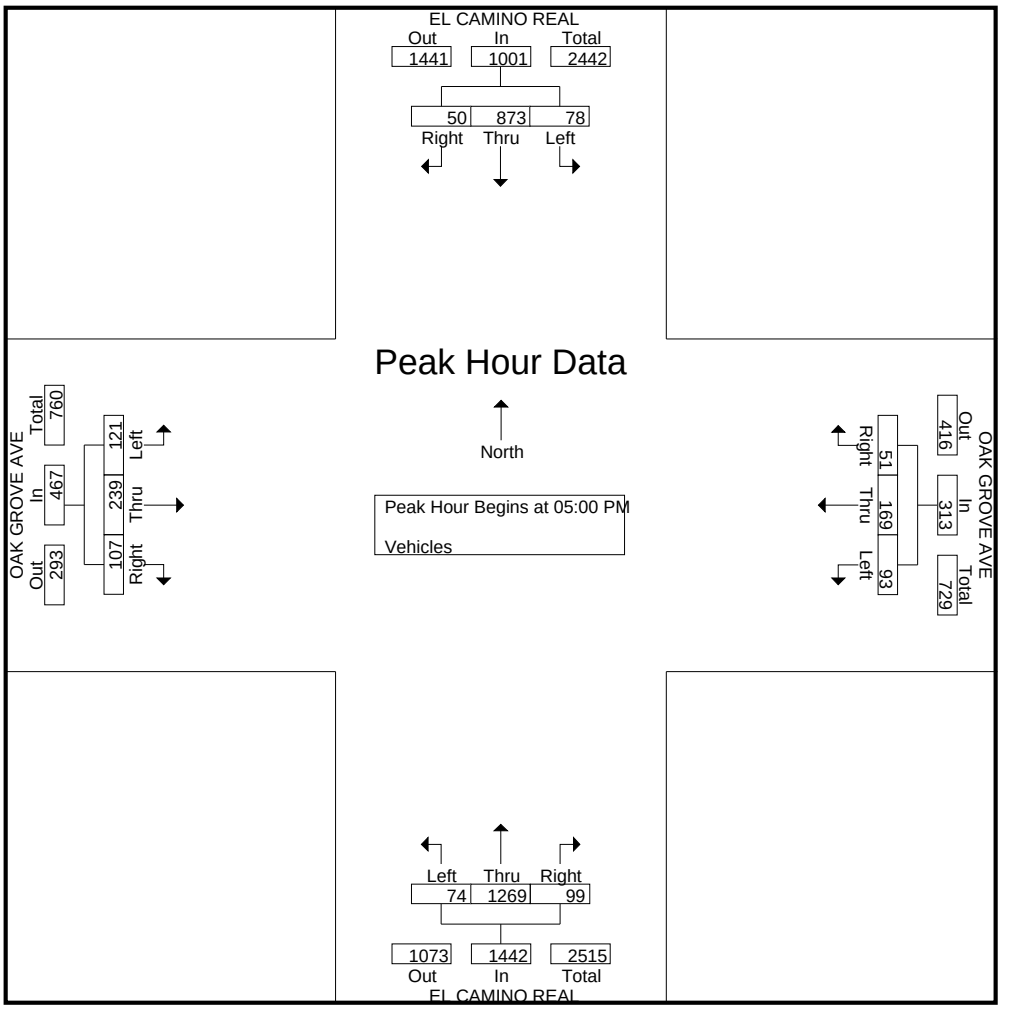

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File Name : 27AM FINAL
Site Code : 00000027
Start Date : 3/2/2023
Page No : 1

Groups Printed- Vehicles

	EL CAMINO REAL Southbound					SANTA CRUZ AVE Westbound					EL CAMINO REAL Northbound					SANTA CRUZ AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	7	137	0	3	147	4	6	3	0	13	7	86	0	2	95	1	0	2	0	3	258
07:15 AM	13	193	0	2	208	11	5	6	0	22	7	119	0	4	130	2	1	2	2	7	367
07:30 AM	15	200	0	2	217	8	10	9	3	30	12	147	0	9	168	4	0	3	0	7	422
07:45 AM	12	255	0	2	269	7	4	10	2	23	8	183	0	8	199	3	3	2	3	11	502
Total	47	785	0	9	841	30	25	28	5	88	34	535	0	23	592	10	4	9	5	28	1549
08:00 AM	14	218	0	12	244	13	10	7	5	35	11	220	0	8	239	4	3	4	3	14	532
08:15 AM	13	293	0	6	312	19	6	13	2	40	21	237	0	6	264	4	5	9	6	24	640
08:30 AM	15	235	0	9	259	7	5	15	2	29	22	218	0	5	245	4	2	5	2	13	546
08:45 AM	15	259	0	7	281	7	7	11	1	26	12	219	0	6	237	2	3	6	1	12	556
Total	57	1005	0	34	1096	46	28	46	10	130	66	894	0	25	985	14	13	24	12	63	2274
09:00 AM	17	292	0	9	318	12	7	18	1	38	15	196	0	7	218	8	4	5	0	17	591
09:15 AM	21	205	0	4	230	9	5	9	6	29	19	215	0	5	239	3	3	6	1	13	511
09:30 AM	22	192	0	10	224	13	4	15	4	36	9	171	0	11	191	2	1	10	6	19	470
09:45 AM	18	241	0	15	274	11	7	8	8	34	12	186	0	12	210	7	2	8	5	22	540
Total	78	930	0	38	1046	45	23	50	19	137	55	768	0	35	858	20	10	29	12	71	2112
Grand Total	182	2720	0	81	2983	121	76	124	34	355	155	2197	0	83	2435	44	27	62	29	162	5935
Apprch %	6.1	91.2	0	2.7		34.1	21.4	34.9	9.6		6.4	90.2	0	3.4		27.2	16.7	38.3	17.9		
Total %	3.1	45.8	0	1.4	50.3	2	1.3	2.1	0.6	6	2.6	37	0	1.4	41	0.7	0.5	1	0.5	2.7	

	EL CAMINO REAL Southbound				SANTA CRUZ AVE Westbound				EL CAMINO REAL Northbound				SANTA CRUZ AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	13	**293**	0	306	**19**	6	13	**38**	21	**237**	0	**258**	4	**5**	**9**	**18**	**620**
08:30 AM	15	235	0	250	7	5	15	27	**22**	218	0	240	4	2	5	11	528
08:45 AM	15	259	0	274	7	**7**	11	25	12	219	0	231	2	3	6	11	541
09:00 AM	**17**	292	0	**309**	12	7	**18**	37	15	196	0	211	**8**	4	5	17	574
Total Volume	60	1079	0	1139	45	25	57	127	70	870	0	940	18	14	25	57	2263
% App. Total	5.3	94.7	0		35.4	19.7	44.9		7.4	92.6	0		31.6	24.6	43.9		
PHF	.882	.921	.000	.922	.592	.893	.792	.836	.795	.918	.000	.911	.563	.700	.694	.792	.913

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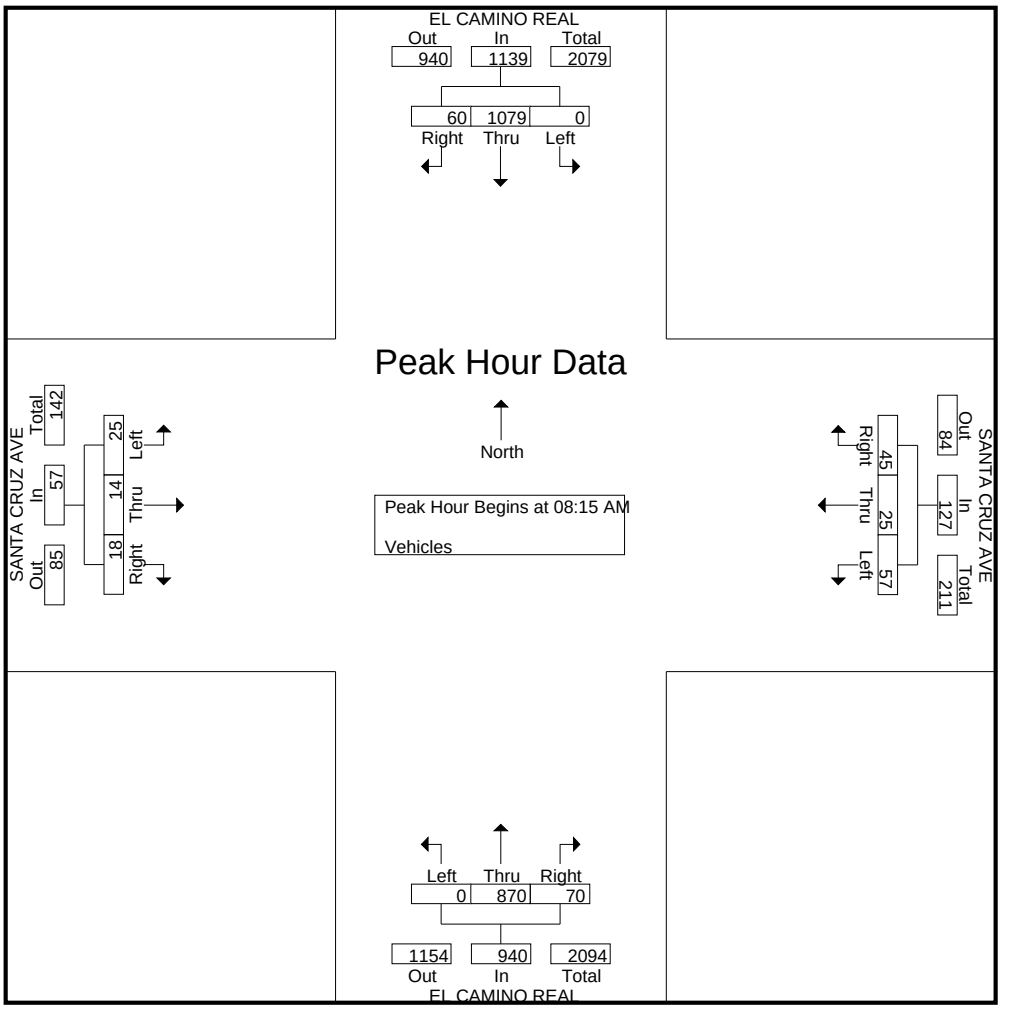

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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					SANTA CRUZ AVE Westbound					EL CAMINO REAL Northbound					SANTA CRUZ AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	18	211	0	10	239	14	6	14	11	45	16	342	0	20	378	10	7	20	4	41	703
04:15 PM	18	223	0	11	252	12	12	8	7	39	18	362	0	4	384	18	1	11	4	34	709
04:30 PM	12	209	0	4	225	11	2	13	3	29	8	329	0	10	347	12	5	18	10	45	646
04:45 PM	20	246	0	11	277	8	1	12	10	31	6	368	0	9	383	13	1	17	1	32	723
Total	68	889	0	36	993	45	21	47	31	144	48	1401	0	43	1492	53	14	66	19	152	2781
05:00 PM	27	250	0	18	295	9	6	12	8	35	7	332	0	12	351	21	3	12	7	43	724
05:15 PM	14	225	0	10	249	25	14	13	0	52	11	347	0	16	374	14	6	10	6	36	711
05:30 PM	22	264	0	13	299	8	7	4	1	20	12	372	0	9	393	12	8	17	9	46	758
05:45 PM	23	258	0	20	301	5	11	3	5	24	14	340	0	3	357	11	2	16	4	33	715
Total	86	997	0	61	1144	47	38	32	14	131	44	1391	0	40	1475	58	19	55	26	158	2908
06:00 PM	23	209	0	15	247	12	5	6	3	26	16	325	0	14	355	14	0	9	6	29	657
06:15 PM	23	224	0	7	254	9	10	6	4	29	15	319	0	13	347	8	2	10	8	28	658
06:30 PM	16	196	0	7	219	8	7	16	3	34	14	267	0	9	290	13	5	17	0	35	578
06:45 PM	17	171	0	7	195	3	5	16	0	24	13	271	1	6	291	7	2	11	0	20	530
Total	79	800	0	36	915	32	27	44	10	113	58	1182	1	42	1283	42	9	47	14	112	2423
Grand Total	233	2686	0	133	3052	124	86	123	55	388	150	3974	1	125	4250	153	42	168	59	422	8112
Apprch %	7.6	88	0	4.4		32	22.2	31.7	14.2		3.5	93.5	0	2.9		36.3	10	39.8	14		
Total %	2.9	33.1	0	1.6	37.6	1.5	1.1	1.5	0.7	4.8	1.8	49	0	1.5	52.4	1.9	0.5	2.1	0.7	5.2	

	EL CAMINO REAL Southbound				SANTA CRUZ AVE Westbound				EL CAMINO REAL Northbound				SANTA CRUZ AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	20	246	0	266	8	1	12	21	6	368	0	374	13	1	**17**	31	692
05:00 PM	**27**	250	0	277	9	6	12	27	7	332	0	339	**21**	3	12	36	679
05:15 PM	14	225	0	239	**25**	**14**	**13**	**52**	11	347	0	358	14	6	10	30	679
05:30 PM	22	**264**	0	**286**	8	7	4	19	**12**	**372**	0	**384**	12	**8**	17	**37**	**726**
Total Volume	83	985	0	1068	50	28	41	119	36	1419	0	1455	60	18	56	134	2776
% App. Total	7.8	92.2	0		42	23.5	34.5		2.5	97.5	0		44.8	13.4	41.8		
PHF	.769	.933	.000	.934	.500	.500	.788	.572	.750	.954	.000	.947	.714	.563	.824	.905	.956

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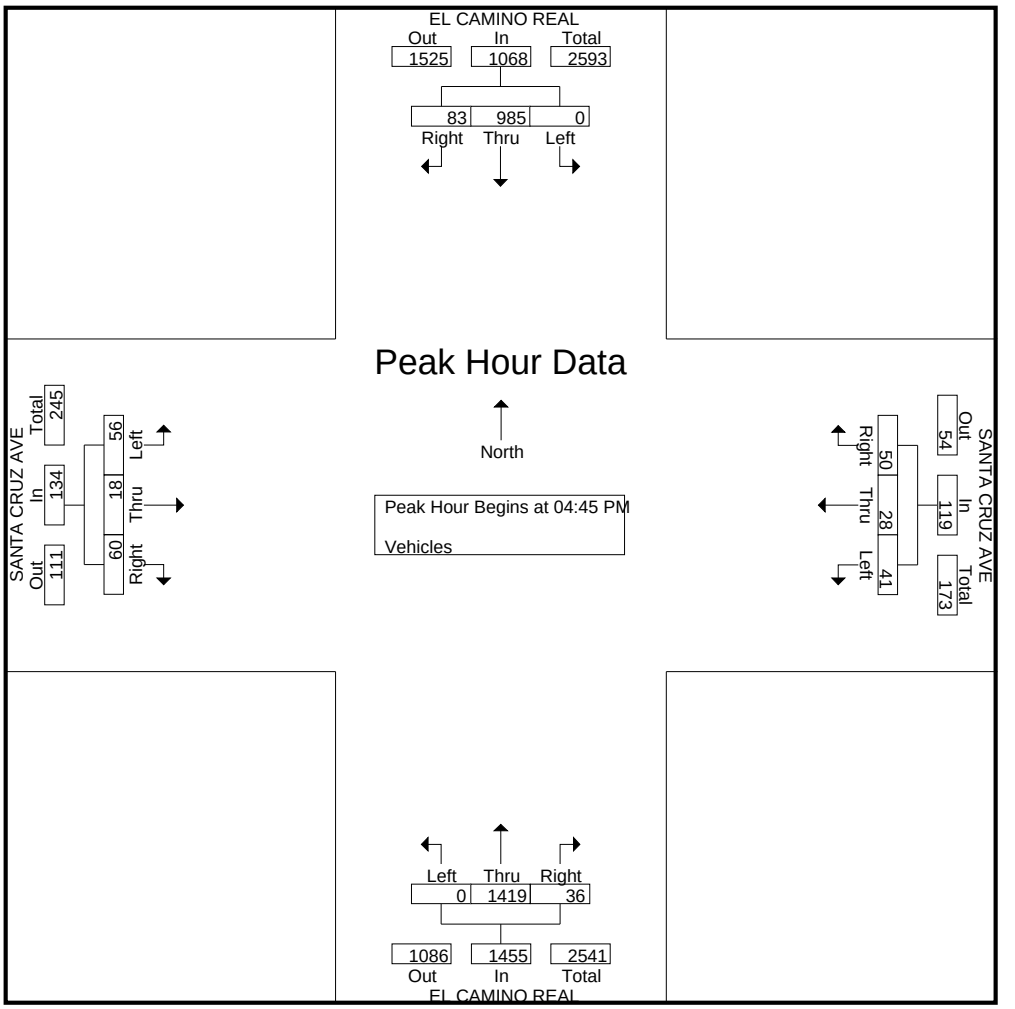

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File Name : 28AM FINAL
Site Code : 00000028
Start Date : 3/2/2023
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					RAVENSWOOD AVE Westbound					EL CAMINO REAL Northbound					MENLO AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	6	126	11	6	149	4	27	36	1	68	28	79	5	1	113	7	28	7	1	43	373
07:15 AM	0	173	16	2	191	8	39	63	2	112	45	113	8	0	166	5	37	4	2	48	517
07:30 AM	4	205	14	2	225	8	42	51	1	102	63	140	15	0	218	12	35	7	0	54	599
07:45 AM	3	225	20	7	255	10	53	77	2	142	73	166	15	0	254	13	44	15	3	75	726
Total	13	729	61	17	820	30	161	227	6	424	209	498	43	1	751	37	144	33	6	220	2215
08:00 AM	5	200	23	4	232	7	53	74	2	136	118	225	23	0	366	14	68	11	1	94	828
08:15 AM	5	278	29	1	313	20	58	95	5	178	114	217	27	3	361	14	80	22	4	120	972
08:30 AM	5	213	31	4	253	10	41	97	1	149	90	209	20	0	319	17	64	14	4	99	820
08:45 AM	3	247	21	5	276	7	41	89	0	137	81	193	34	0	308	23	59	17	0	99	820
Total	18	938	104	14	1074	44	193	355	8	600	403	844	104	3	1354	68	271	64	9	412	3440
09:00 AM	7	291	27	2	327	11	29	87	0	127	60	187	27	0	274	24	36	13	0	73	801
09:15 AM	9	207	21	10	247	15	42	93	3	153	66	201	24	0	291	23	29	17	2	71	762
09:30 AM	9	164	14	11	198	11	37	59	3	110	60	159	25	0	244	17	29	7	3	56	608
09:45 AM	4	224	17	5	250	13	32	57	4	106	63	167	31	0	261	24	32	11	1	68	685
Total	29	886	79	28	1022	50	140	296	10	496	249	714	107	0	1070	88	126	48	6	268	2856
Grand Total	60	2553	244	59	2916	124	494	878	24	1520	861	2056	254	4	3175	193	541	145	21	900	8511
Apprch %	2.1	87.6	8.4	2		8.2	32.5	57.8	1.6		27.1	64.8	8	0.1		21.4	60.1	16.1	2.3		
Total %	0.7	30	2.9	0.7	34.3	1.5	5.8	10.3	0.3	17.9	10.1	24.2	3	0	37.3	2.3	6.4	1.7	0.2	10.6	

	EL CAMINO REAL Southbound				RAVENSWOOD AVE Westbound				EL CAMINO REAL Northbound				MENLO AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**5**	200	23	228	7	53	74	134	**118**	**225**	23	**366**	14	68	11	93	821
08:15 AM	5	**278**	29	**312**	**20**	**58**	95	**173**	114	217	27	358	14	**80**	**22**	**116**	**959**
08:30 AM	5	213	**31**	249	10	41	**97**	148	90	209	20	319	17	64	14	95	811
08:45 AM	3	247	21	271	7	41	89	137	81	193	**34**	308	**23**	59	17	99	815
Total Volume	18	938	104	1060	44	193	355	592	403	844	104	1351	68	271	64	403	3406
% App. Total	1.7	88.5	9.8		7.4	32.6	60		29.8	62.5	7.7		16.9	67.2	15.9		
PHF	.900	.844	.839	.849	.550	.832	.915	.855	.854	.938	.765	.923	.739	.847	.727	.869	.888

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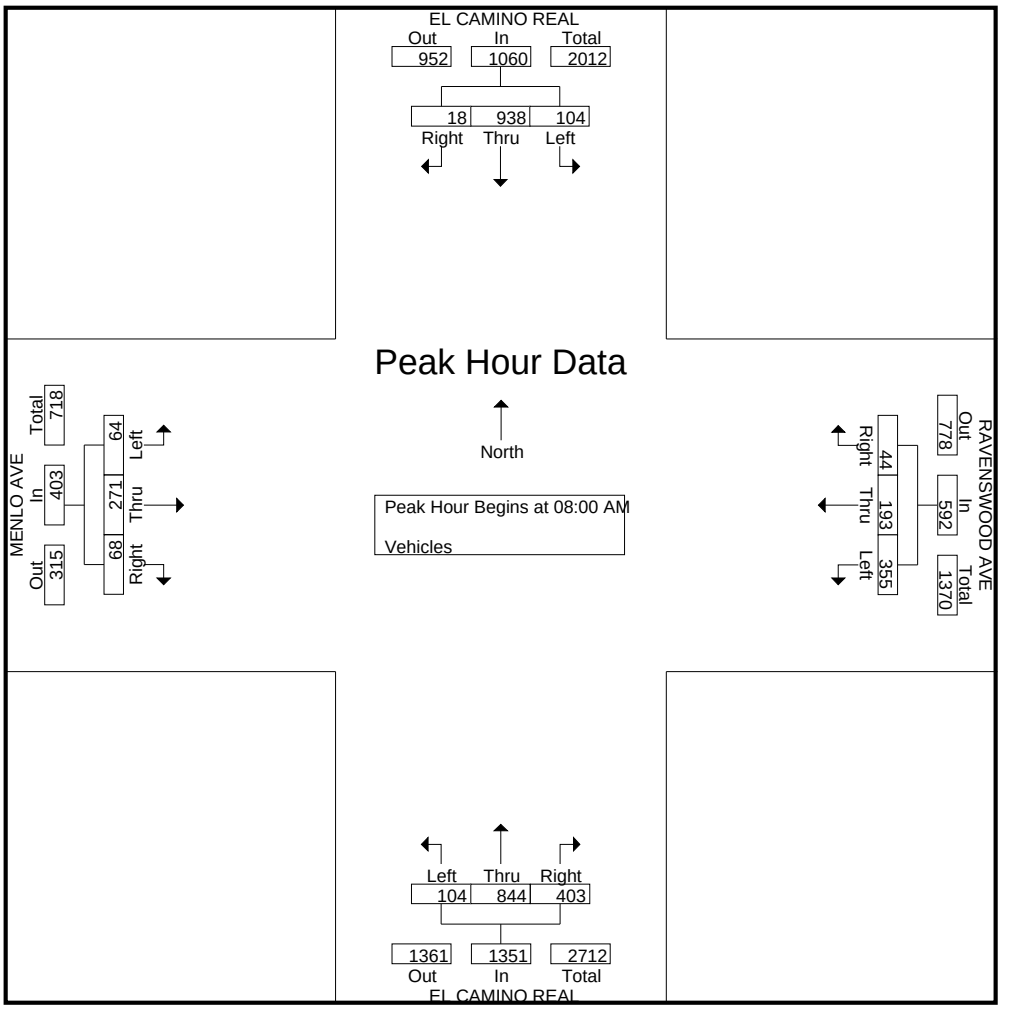

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File Name : 28PM FINAL
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					RAVENSWOOD AVE Westbound					EL CAMINO REAL Northbound					MENLO AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	17	201	27	5	250	22	55	83	8	168	103	312	32	0	447	21	44	13	3	81	946
04:15 PM	5	221	25	8	259	13	36	52	3	104	112	339	30	0	481	22	70	13	16	121	965
04:30 PM	5	184	33	12	234	17	37	73	4	131	104	293	37	0	434	24	68	17	15	124	923
04:45 PM	16	240	26	8	290	19	54	80	4	157	133	333	33	2	501	21	59	8	6	94	1042
Total	43	846	111	33	1033	71	182	288	19	560	452	1277	132	2	1863	88	241	51	40	420	3876
05:00 PM	7	228	35	5	275	12	46	74	7	139	125	300	31	0	456	20	67	14	5	106	976
05:15 PM	13	210	33	13	269	17	57	106	0	180	154	343	29	0	526	18	78	16	10	122	1097
05:30 PM	8	242	40	1	291	10	39	81	5	135	128	352	31	0	511	16	72	10	0	98	1035
05:45 PM	12	211	29	3	255	14	54	105	2	175	101	309	38	0	448	27	62	19	7	115	993
Total	40	891	137	22	1090	53	196	366	14	629	508	1304	129	0	1941	81	279	59	22	441	4101
06:00 PM	15	209	15	7	246	11	36	60	0	107	124	326	27	0	477	18	64	16	2	100	930
06:15 PM	10	203	29	5	247	12	43	53	2	110	113	296	28	0	437	27	59	20	10	116	910
06:30 PM	11	178	22	0	211	14	44	63	6	127	103	230	28	0	361	23	59	21	7	110	809
06:45 PM	10	180	17	3	210	11	44	46	2	103	105	272	24	0	401	31	49	18	10	108	822
Total	46	770	83	15	914	48	167	222	10	447	445	1124	107	0	1676	99	231	75	29	434	3471
Grand Total	129	2507	331	70	3037	172	545	876	43	1636	1405	3705	368	2	5480	268	751	185	91	1295	11448
Apprch %	4.2	82.5	10.9	2.3		10.5	33.3	53.5	2.6		25.6	67.6	6.7	0		20.7	58	14.3	7		
Total %	1.1	21.9	2.9	0.6	26.5	1.5	4.8	7.7	0.4	14.3	12.3	32.4	3.2	0	47.9	2.3	6.6	1.6	0.8	11.3	

	EL CAMINO REAL Southbound				RAVENSWOOD AVE Westbound				EL CAMINO REAL Northbound				MENLO AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**16**	240	26	282	**19**	54	80	153	133	333	**33**	499	**21**	59	8	88	1022
05:00 PM	7	228	35	270	12	46	74	132	125	300	31	456	20	67	14	101	959
05:15 PM	13	210	33	256	17	**57**	**106**	**180**	**154**	343	29	**526**	18	**78**	**16**	**112**	**1074**
05:30 PM	8	**242**	**40**	**290**	10	39	81	130	128	**352**	31	511	16	72	10	98	1029
Total Volume	44	920	134	1098	58	196	341	595	540	1328	124	1992	75	276	48	399	4084
% App. Total	4	83.8	12.2		9.7	32.9	57.3		27.1	66.7	6.2		18.8	69.2	12		
PHF	.688	.950	.838	.947	.763	.860	.804	.826	.877	.943	.939	.947	.893	.885	.750	.891	.951

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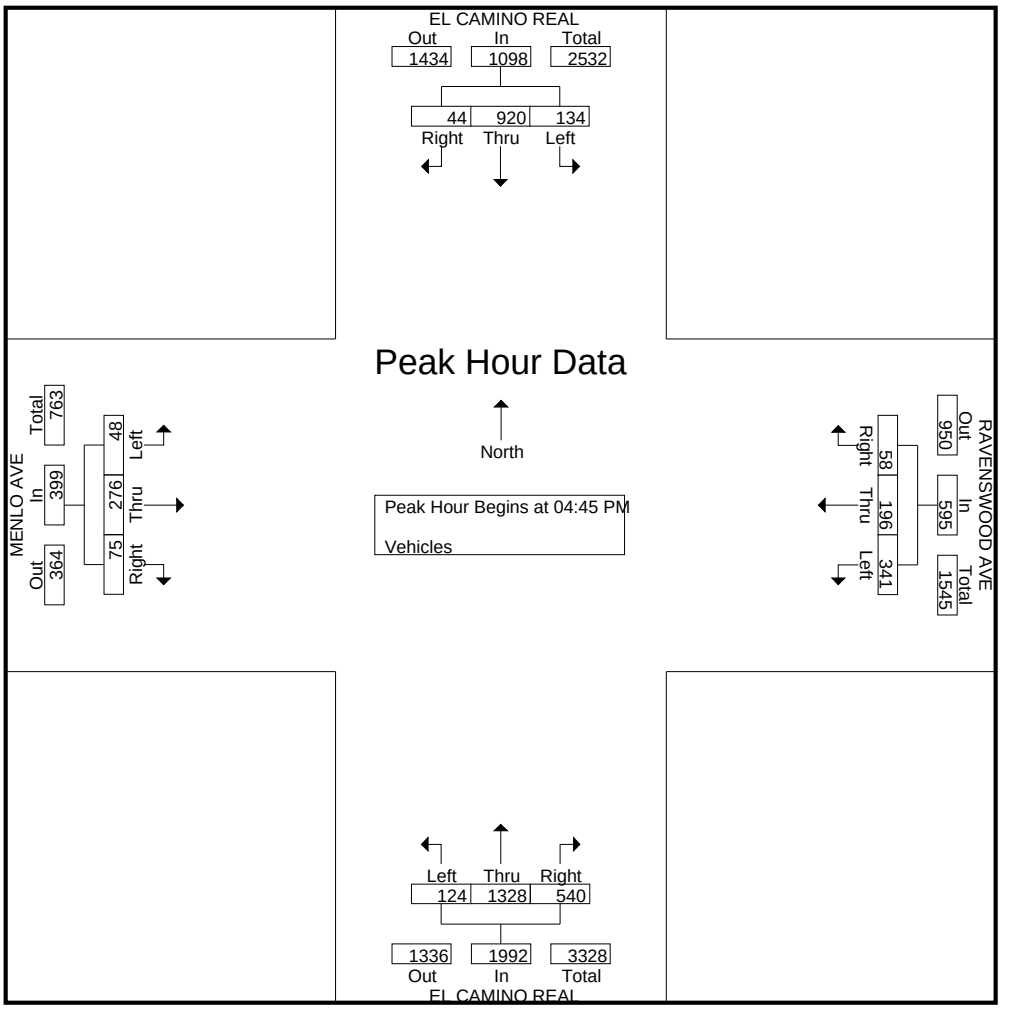

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File Name : 29AM FINAL
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Start Date : 3/2/2023
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DRIVEWAY Westbound					EL CAMINO REAL Northbound					ROBLE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	2	161	6	0	169	0	0	0	0	0	0	112	1	1	114	2	0	2	1	5	288
07:15 AM	4	229	7	0	240	1	0	0	0	1	1	150	3	1	155	3	0	7	1	11	407
07:30 AM	4	263	2	0	269	0	0	0	3	3	1	211	5	0	217	5	0	12	1	18	507
07:45 AM	3	311	5	0	319	1	0	1	1	3	2	247	4	4	257	4	0	9	2	15	594
Total	13	964	20	0	997	2	0	1	4	7	4	720	13	6	743	14	0	30	5	49	1796
08:00 AM	5	263	7	0	275	0	0	2	2	4	5	325	8	3	341	3	0	24	1	28	648
08:15 AM	8	366	7	0	381	3	0	0	4	7	4	335	6	3	348	6	0	17	4	27	763
08:30 AM	3	321	10	0	334	2	0	0	0	2	2	299	4	2	307	5	0	5	7	17	660
08:45 AM	7	350	9	0	366	3	1	4	4	12	3	322	6	4	335	12	0	9	0	21	734
Total	23	1300	33	0	1356	8	1	6	10	25	14	1281	24	12	1331	26	0	55	12	93	2805
09:00 AM	6	384	14	0	404	3	1	2	0	6	5	246	8	5	264	6	1	5	4	16	690
09:15 AM	6	313	11	1	331	11	0	6	0	17	3	265	6	3	277	5	0	7	0	12	637
09:30 AM	5	223	10	0	238	4	1	2	1	8	5	230	3	8	246	6	1	5	3	15	507
09:45 AM	5	297	6	0	308	4	0	2	4	10	4	241	7	4	256	3	1	5	3	12	586
Total	22	1217	41	1	1281	22	2	12	5	41	17	982	24	20	1043	20	3	22	10	55	2420
Grand Total	58	3481	94	1	3634	32	3	19	19	73	35	2983	61	38	3117	60	3	107	27	197	7021
Apprch %	1.6	95.8	2.6	0		43.8	4.1	26	26		1.1	95.7	2	1.2		30.5	1.5	54.3	13.7		
Total %	0.8	49.6	1.3	0	51.8	0.5	0	0.3	0.3	1	0.5	42.5	0.9	0.5	44.4	0.9	0	1.5	0.4	2.8	

	EL CAMINO REAL Southbound				DRIVEWAY Westbound				EL CAMINO REAL Northbound				ROBLE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	**8**	366	7	381	**3**	0	0	3	4	**335**	6	**345**	6	0	**17**	**23**	**752**
08:30 AM	3	321	10	334	2	0	0	2	2	299	4	305	5	0	5	10	651
08:45 AM	7	350	9	366	3	**1**	**4**	**8**	3	322	6	331	**12**	0	9	21	726
09:00 AM	6	**384**	**14**	**404**	3	1	2	6	**5**	246	**8**	259	6	**1**	5	12	681
Total Volume	24	1421	40	1485	11	2	6	19	14	1202	24	1240	29	1	36	66	2810
% App. Total	1.6	95.7	2.7		57.9	10.5	31.6		1.1	96.9	1.9		43.9	1.5	54.5		
PHF	.750	.925	.714	.919	.917	.500	.375	.594	.700	.897	.750	.899	.604	.250	.529	.717	.934

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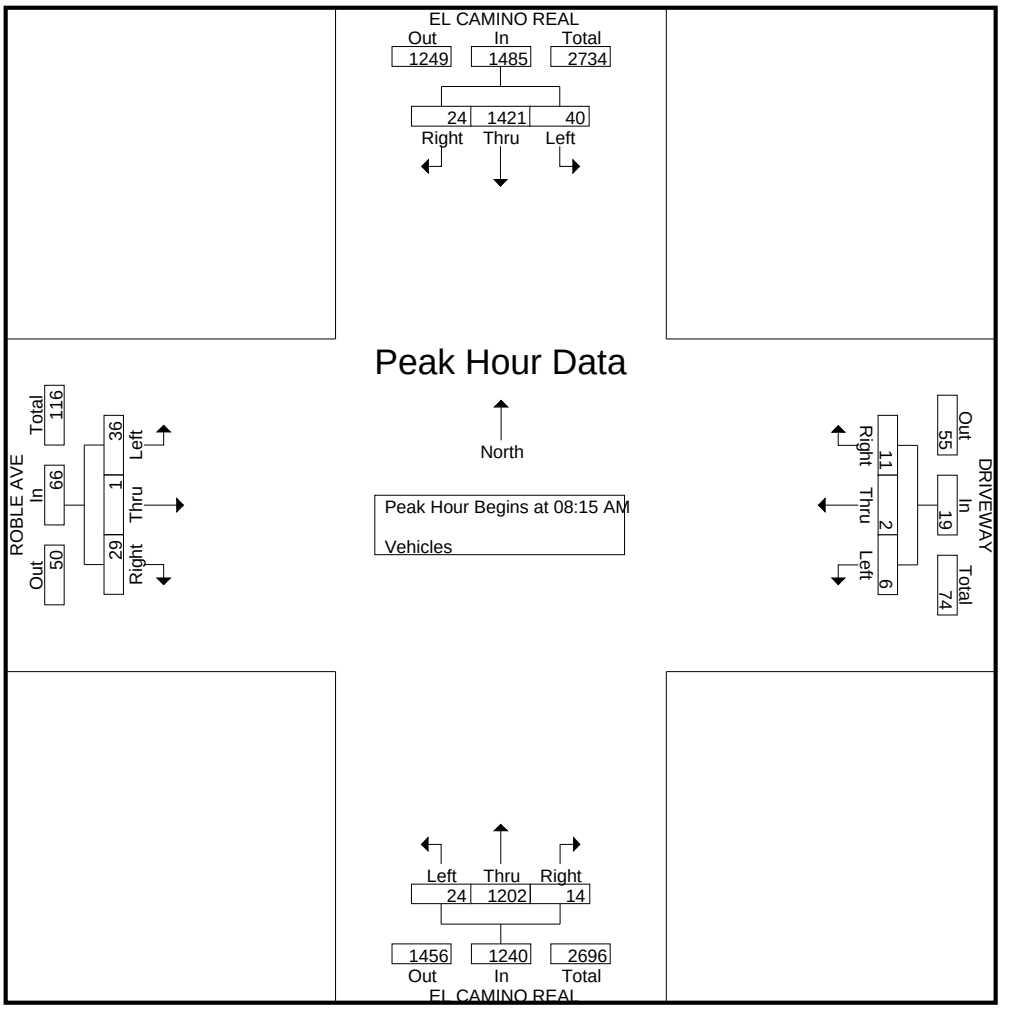

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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DRIVEWAY Westbound					EL CAMINO REAL Northbound					ROBLE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	4	292	12	0	308	12	4	5	0	21	6	362	6	3	377	12	1	15	2	30	736
04:15 PM	6	281	20	0	307	4	3	8	5	20	4	349	7	4	364	4	3	8	4	19	710
04:30 PM	4	261	19	0	284	12	2	9	1	24	5	326	18	3	352	7	1	5	7	20	680
04:45 PM	4	323	15	0	342	11	2	8	2	23	1	389	17	3	410	3	1	12	7	23	798
Total	18	1157	66	0	1241	39	11	30	8	88	16	1426	48	13	1503	26	6	40	20	92	2924
05:00 PM	9	317	13	0	339	18	3	10	2	33	2	411	5	2	420	6	3	12	3	24	816
05:15 PM	4	300	20	0	324	8	3	12	4	27	3	438	17	6	464	12	1	15	7	35	850
05:30 PM	11	325	14	0	350	10	2	10	2	24	3	462	12	4	481	4	1	12	4	21	876
05:45 PM	11	300	21	0	332	9	2	4	1	16	2	406	13	5	426	8	0	18	5	31	805
Total	35	1242	68	0	1345	45	10	36	9	100	10	1717	47	17	1791	30	5	57	19	111	3347
06:00 PM	7	258	21	0	286	9	4	13	1	27	6	432	9	2	449	14	1	10	2	27	789
06:15 PM	8	278	9	0	295	10	7	1	1	19	2	410	18	0	430	2	0	5	5	12	756
06:30 PM	6	236	22	0	264	9	1	8	6	24	2	375	9	2	388	3	1	12	5	21	697
06:45 PM	7	260	14	0	281	16	2	8	3	29	2	341	10	2	355	6	0	10	6	22	687
Total	28	1032	66	0	1126	44	14	30	11	99	12	1558	46	6	1622	25	2	37	18	82	2929
Grand Total	81	3431	200	0	3712	128	35	96	28	287	38	4701	141	36	4916	81	13	134	57	285	9200
Apprch %	2.2	92.4	5.4	0		44.6	12.2	33.4	9.8		0.8	95.6	2.9	0.7		28.4	4.6	47	20		
Total %	0.9	37.3	2.2	0	40.3	1.4	0.4	1	0.3	3.1	0.4	51.1	1.5	0.4	53.4	0.9	0.1	1.5	0.6	3.1	

	EL CAMINO REAL Southbound				DRIVEWAY Westbound				EL CAMINO REAL Northbound				ROBLE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	9	317	13	339	**18**	**3**	10	**31**	2	411	5	418	6	**3**	12	21	809
05:15 PM	4	300	20	324	8	3	**12**	23	**3**	438	**17**	458	**12**	1	15	**28**	833
05:30 PM	**11**	**325**	14	**350**	10	2	10	22	3	**462**	12	**477**	4	1	12	17	**866**
05:45 PM	11	300	**21**	332	9	2	4	15	2	406	13	421	8	0	**18**	26	794
Total Volume	35	1242	68	1345	45	10	36	91	10	1717	47	1774	30	5	57	92	3302
% App. Total	2.6	92.3	5.1		49.5	11	39.6		0.6	96.8	2.6		32.6	5.4	62		
PHF	.795	.955	.810	.961	.625	.833	.750	.734	.833	.929	.691	.930	.625	.417	.792	.821	.953

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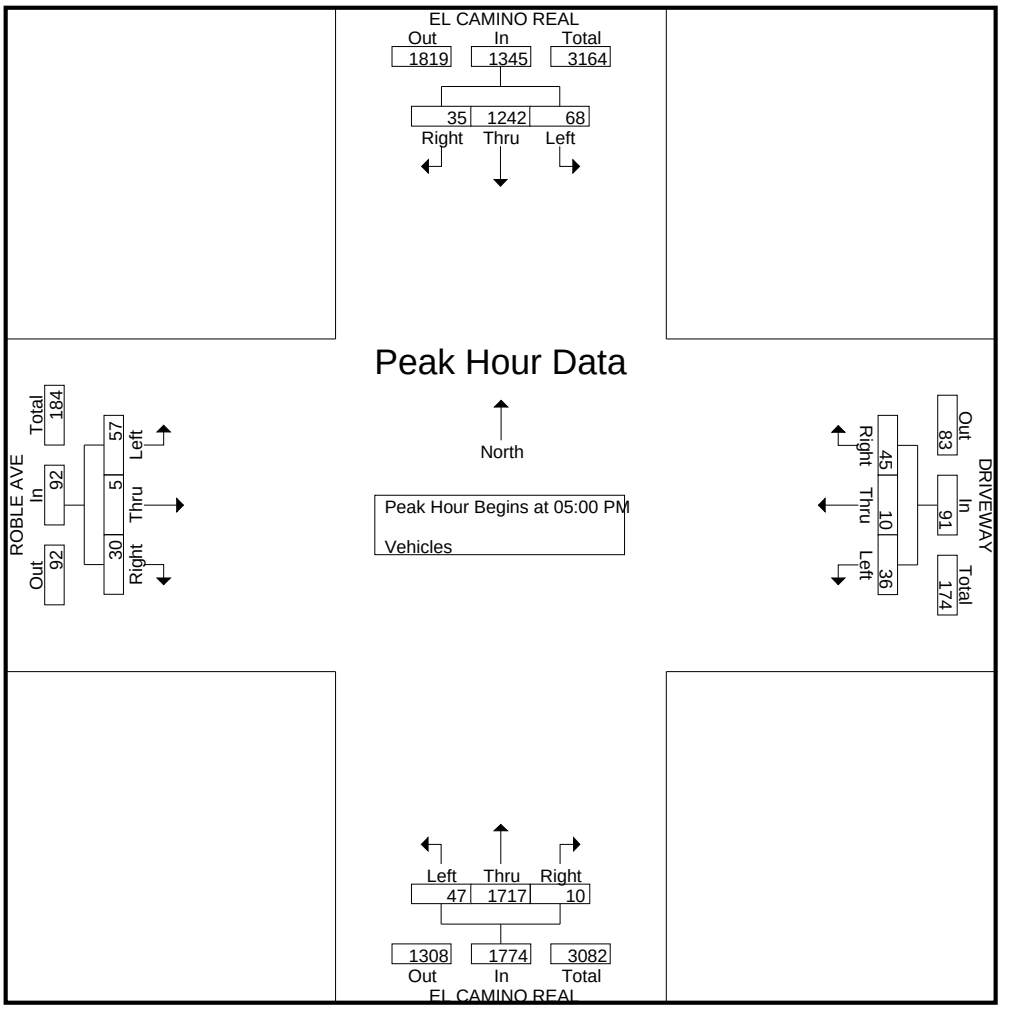

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File Name : 30AM FINAL
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Start Date : 3/2/2023
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DRIVEWAY Westbound					EL CAMINO REAL Northbound					MIDDLE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	14	130	1	1	146	0	0	0	1	1	0	109	32	0	141	10	1	13	3	27	315
07:15 AM	24	209	0	0	233	0	0	0	1	1	1	141	29	1	172	30	0	25	2	57	463
07:30 AM	20	248	0	0	268	0	1	0	2	3	1	207	36	0	244	51	0	17	0	68	583
07:45 AM	24	272	0	1	297	0	0	0	5	5	3	236	40	1	280	42	0	37	3	82	664
Total	82	859	1	2	944	0	1	0	9	10	5	693	137	2	837	133	1	92	8	234	2025
08:00 AM	21	253	0	0	274	1	0	1	5	7	0	268	43	0	311	43	0	69	0	112	704
08:15 AM	26	339	0	1	366	0	0	0	2	2	0	264	48	1	313	56	0	50	2	108	789
08:30 AM	24	286	1	1	312	0	1	0	3	4	1	254	36	0	291	53	1	41	2	97	704
08:45 AM	20	330	1	0	351	0	0	0	3	3	0	241	46	1	288	54	0	38	1	93	735
Total	91	1208	2	2	1303	1	1	1	13	16	1	1027	173	2	1203	206	1	198	5	410	2932
09:00 AM	26	351	0	0	377	0	1	0	0	1	3	246	61	1	311	41	1	37	1	80	769
09:15 AM	21	278	0	3	302	0	0	0	1	1	0	241	47	0	288	40	1	36	1	78	669
09:30 AM	25	208	0	0	233	0	0	0	0	0	0	223	45	0	268	46	2	38	0	86	587
09:45 AM	13	267	0	1	281	1	1	0	5	7	2	208	54	3	267	53	0	38	5	96	651
Total	85	1104	0	4	1193	1	2	0	6	9	5	918	207	4	1134	180	4	149	7	340	2676
Grand Total	258	3171	3	8	3440	2	4	1	28	35	11	2638	517	8	3174	519	6	439	20	984	7633
Apprch %	7.5	92.2	0.1	0.2		5.7	11.4	2.9	80		0.3	83.1	16.3	0.3		52.7	0.6	44.6	2		
Total %	3.4	41.5	0	0.1	45.1	0	0.1	0	0.4	0.5	0.1	34.6	6.8	0.1	41.6	6.8	0.1	5.8	0.3	12.9	

	EL CAMINO REAL Southbound				DRIVEWAY Westbound				EL CAMINO REAL Northbound				MIDDLE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	**26**	339	0	365	0	0	0	0	0	**264**	48	**312**	**56**	0	**50**	**106**	**783**
08:30 AM	24	286	**1**	311	0	**1**	0	**1**	1	254	36	291	53	**1**	41	95	698
08:45 AM	20	330	1	351	0	0	0	0	0	241	46	287	54	0	38	92	730
09:00 AM	26	**351**	0	**377**	0	1	0	1	**3**	246	**61**	310	41	1	37	79	767
Total Volume	96	1306	2	1404	0	2	0	2	4	1005	191	1200	204	2	166	372	2978
% App. Total	6.8	93	0.1		0	100	0		0.3	83.8	15.9		54.8	0.5	44.6		
PHF	.923	.930	.500	.931	.000	.500	.000	.500	.333	.952	.783	.962	.911	.500	.830	.877	.951

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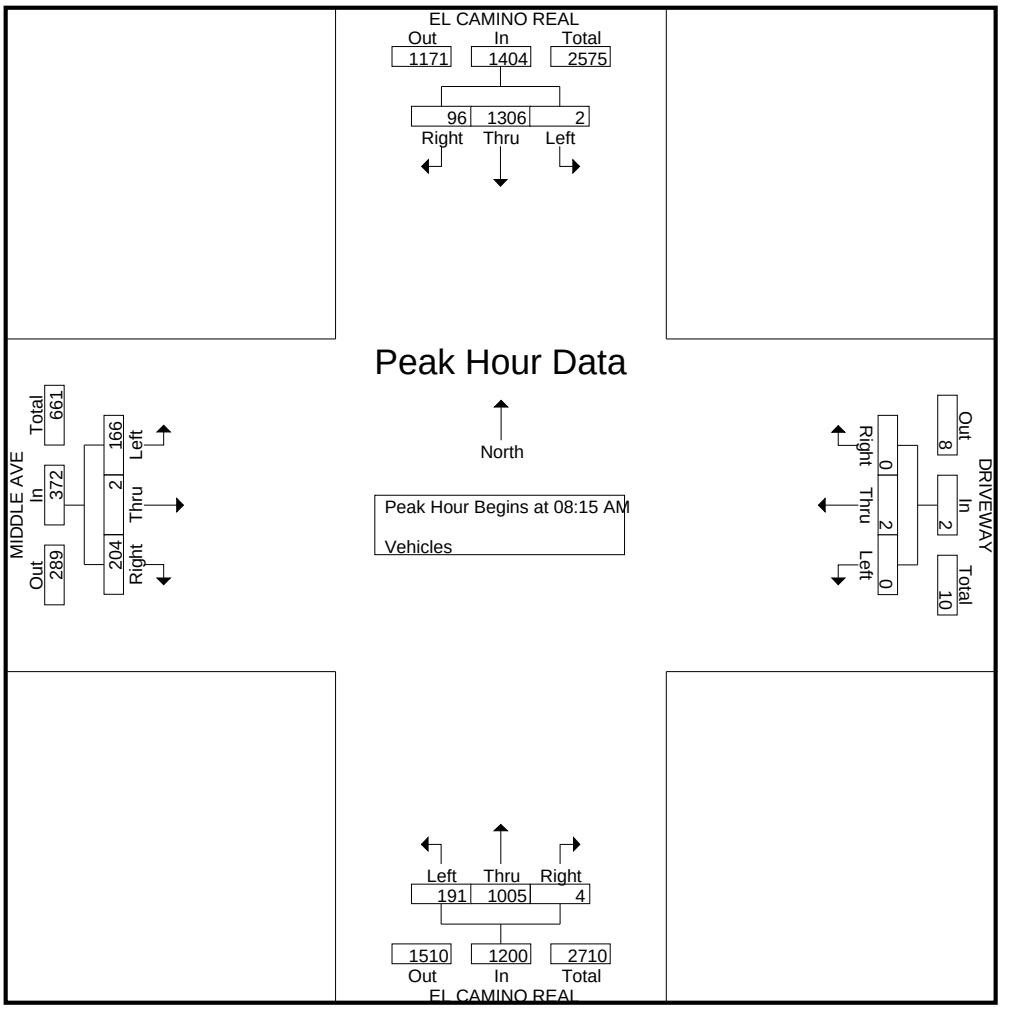

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File Name : 30PM FINAL
Site Code : 00000030
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DRIVEWAY Westbound					EL CAMINO REAL Northbound					MIDDLE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	23	252	1	0	276	0	2	2	0	4	0	345	61	0	406	55	0	52	3	110	796
04:15 PM	19	274	0	1	294	0	0	3	4	7	0	403	55	0	458	44	1	48	1	94	853
04:30 PM	18	224	0	1	243	2	0	0	0	2	0	408	65	1	474	49	0	58	6	113	832
04:45 PM	37	272	0	0	309	0	0	0	2	2	0	414	58	0	472	38	0	59	6	103	886
Total	97	1022	1	2	1122	2	2	5	6	15	0	1570	239	1	1810	186	1	217	16	420	3367
05:00 PM	35	287	0	2	324	1	1	0	4	6	1	376	63	0	440	56	0	54	1	111	881
05:15 PM	27	267	2	2	298	0	0	0	1	1	0	445	84	0	529	40	0	82	5	127	955
05:30 PM	21	304	0	3	328	2	0	0	1	3	0	425	65	0	490	49	0	43	6	98	919
05:45 PM	32	270	1	0	303	0	0	0	1	1	0	392	76	0	468	53	0	54	1	108	880
Total	115	1128	3	7	1253	3	1	0	7	11	1	1638	288	0	1927	198	0	233	13	444	3635
06:00 PM	19	243	0	2	264	3	0	2	1	6	0	394	64	0	458	50	1	55	1	107	835
06:15 PM	12	268	0	2	282	0	0	0	1	1	0	407	62	0	469	42	0	29	2	73	825
06:30 PM	16	228	0	0	244	0	0	0	3	3	0	354	62	0	416	48	0	58	3	109	772
06:45 PM	19	236	0	0	255	0	0	1	0	1	2	312	41	0	355	39	0	37	0	76	687
Total	66	975	0	4	1045	3	0	3	5	11	2	1467	229	0	1698	179	1	179	6	365	3119
Grand Total	278	3125	4	13	3420	8	3	8	18	37	3	4675	756	1	5435	563	2	629	35	1229	10121
Apprch %	8.1	91.4	0.1	0.4		21.6	8.1	21.6	48.6		0.1	86	13.9	0		45.8	0.2	51.2	2.8		
Total %	2.7	30.9	0	0.1	33.8	0.1	0	0.1	0.2	0.4	0	46.2	7.5	0	53.7	5.6	0	6.2	0.3	12.1	

	EL CAMINO REAL Southbound				DRIVEWAY Westbound				EL CAMINO REAL Northbound				MIDDLE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**37**	272	0	309	0	0	0	0	0	414	58	472	38	0	59	97	878
05:00 PM	35	287	0	322	1	**1**	0	**2**	**1**	376	63	440	**56**	0	54	110	874
05:15 PM	27	267	**2**	296	0	0	0	0	0	**445**	**84**	**529**	40	0	**82**	**122**	**947**
05:30 PM	21	**304**	0	**325**	**2**	0	0	2	0	425	65	490	49	0	43	92	909
Total Volume	120	1130	2	1252	3	1	0	4	1	1660	270	1931	183	0	238	421	3608
% App. Total	9.6	90.3	0.2		75	25	0		0.1	86	14		43.5	0	56.5		
PHF	.811	.929	.250	.963	.375	.250	.000	.500	.250	.933	.804	.913	.817	.000	.726	.863	.952

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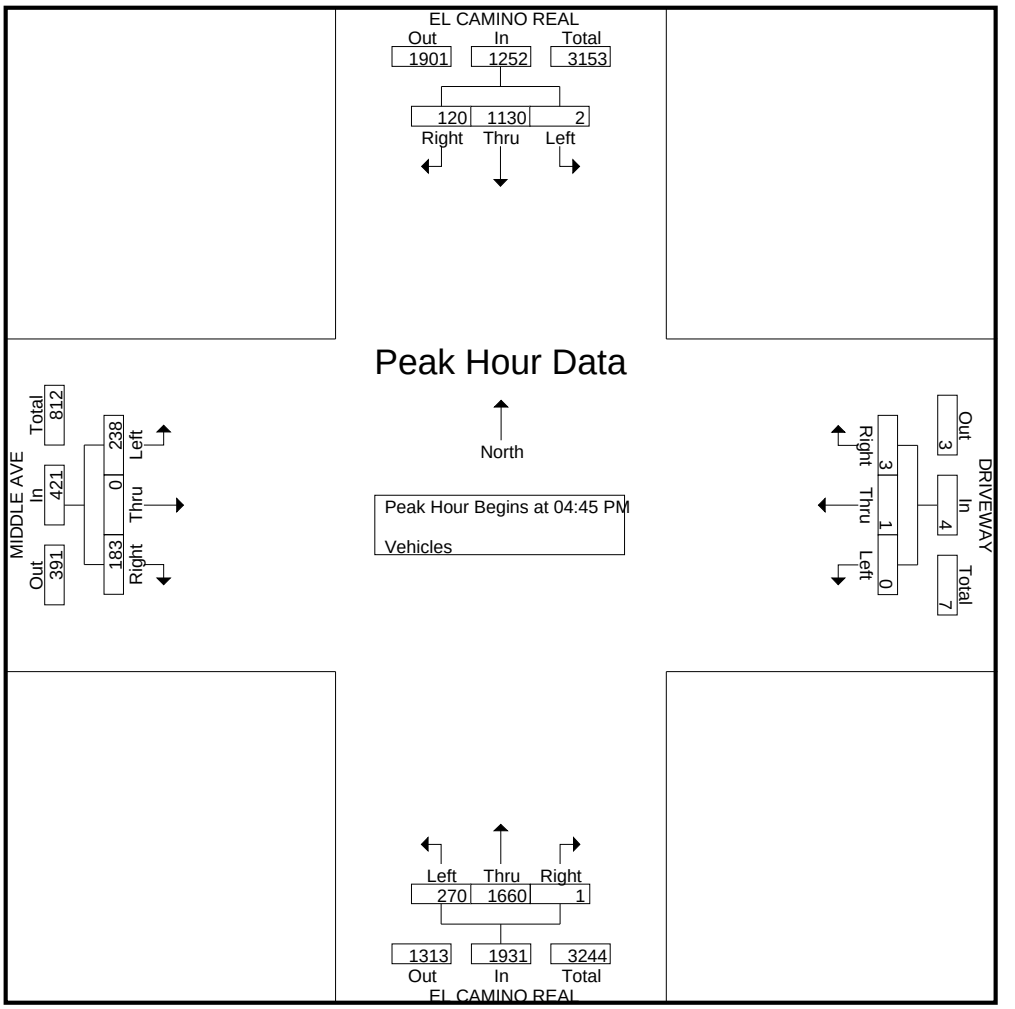

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File Name : 31AM FINAL
Site Code : 00000031
Start Date : 3/2/2023
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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DRIVEWAY Westbound					EL CAMINO REAL Northbound					CAMBRIDGE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	157	1	0	158	1	0	0	1	2	1	137	9	0	147	0	0	3	4	7	314
07:15 AM	0	242	3	0	245	0	0	0	2	2	1	166	15	0	182	1	0	2	0	3	432
07:30 AM	1	311	2	0	314	0	0	0	4	4	1	217	18	0	236	5	0	7	1	13	567
07:45 AM	0	320	6	2	328	0	0	0	1	1	2	256	23	0	281	4	0	8	2	14	624
Total	1	1030	12	2	1045	1	0	0	8	9	5	776	65	0	846	10	0	20	7	37	1937
08:00 AM	4	290	8	0	302	0	0	0	2	2	3	308	28	0	339	4	0	5	1	10	653
08:15 AM	2	392	5	1	400	2	0	0	4	6	0	312	18	0	330	13	0	5	1	19	755
08:30 AM	4	323	8	1	336	0	0	1	2	3	0	294	26	0	320	7	0	2	3	12	671
08:45 AM	2	385	6	0	393	1	0	1	3	5	2	284	28	0	314	11	1	3	1	16	728
Total	12	1390	27	2	1431	3	0	2	11	16	5	1198	100	0	1303	35	1	15	6	57	2807
09:00 AM	2	391	8	0	401	0	0	1	0	1	1	284	13	0	298	7	0	4	1	12	712
09:15 AM	4	312	7	0	323	0	0	1	3	4	0	268	19	0	287	8	0	4	0	12	626
09:30 AM	4	254	4	2	264	1	0	1	0	2	1	250	21	0	272	7	0	2	0	9	547
09:45 AM	0	317	5	0	322	0	0	0	0	0	2	227	21	0	250	6	0	7	4	17	589
Total	10	1274	24	2	1310	1	0	3	3	7	4	1029	74	0	1107	28	0	17	5	50	2474
Grand Total	23	3694	63	6	3786	5	0	5	22	32	14	3003	239	0	3256	73	1	52	18	144	7218
Apprch %	0.6	97.6	1.7	0.2		15.6	0	15.6	68.8		0.4	92.2	7.3	0		50.7	0.7	36.1	12.5		
Total %	0.3	51.2	0.9	0.1	52.5	0.1	0	0.1	0.3	0.4	0.2	41.6	3.3	0	45.1	1	0	0.7	0.2	2	

	EL CAMINO REAL Southbound				DRIVEWAY Westbound				EL CAMINO REAL Northbound				CAMBRIDGE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	2	**392**	5	399	**2**	0	0	**2**	0	**312**	18	**330**	**13**	0	**5**	**18**	**749**
08:30 AM	**4**	323	**8**	335	0	0	**1**	1	0	294	26	320	7	0	2	9	665
08:45 AM	2	385	6	393	1	0	1	2	**2**	284	**28**	314	11	**1**	3	15	724
09:00 AM	2	391	8	**401**	0	0	1	1	1	284	13	298	7	0	4	11	711
Total Volume	10	1491	27	1528	3	0	3	6	3	1174	85	1262	38	1	14	53	2849
% App. Total	0.7	97.6	1.8		50	0	50		0.2	93	6.7		71.7	1.9	26.4		
PHF	.625	.951	.844	.953	.375	.000	.750	.750	.375	.941	.759	.956	.731	.250	.700	.736	.951

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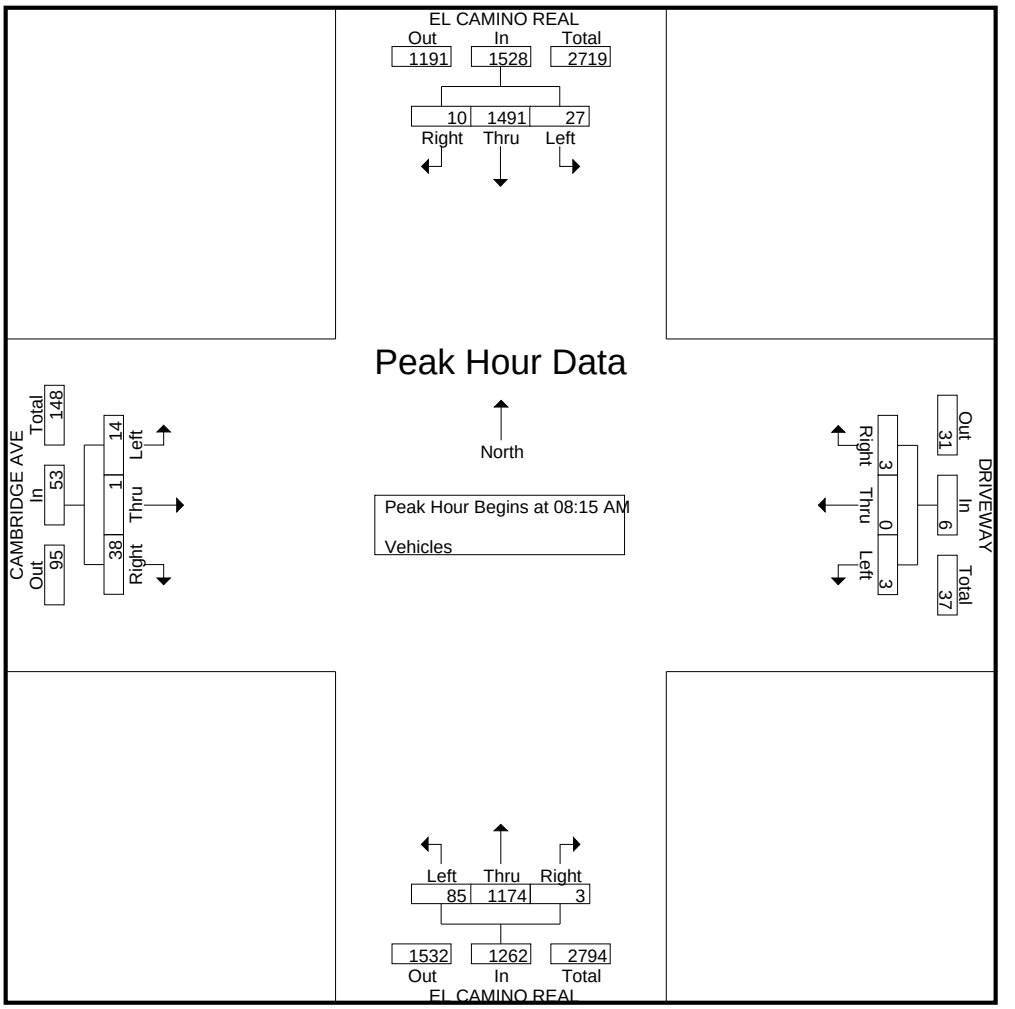

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Groups Printed- Vehicles

	EL CAMINO REAL Southbound					DRIVEWAY Westbound					EL CAMINO REAL Northbound					CAMBRIDGE AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	2	301	4	0	307	1	0	2	1	4	1	378	35	0	414	10	0	6	2	18	743
04:15 PM	5	313	7	2	327	1	0	0	2	3	1	413	30	0	444	6	0	4	2	12	786
04:30 PM	2	284	5	0	291	0	0	1	0	1	0	398	37	0	435	6	0	8	5	19	746
04:45 PM	2	288	3	0	293	3	0	1	1	5	0	444	27	0	471	6	0	3	6	15	784
Total	11	1186	19	2	1218	5	0	4	4	13	2	1633	129	0	1764	28	0	21	15	64	3059
05:00 PM	0	349	6	0	355	0	0	0	4	4	0	415	32	0	447	8	0	6	2	16	822
05:15 PM	2	308	4	0	314	0	0	0	1	1	1	539	40	0	580	7	0	8	4	19	914
05:30 PM	8	343	5	1	357	1	0	0	6	7	0	526	28	0	554	12	0	4	1	17	935
05:45 PM	0	331	10	1	342	0	1	1	1	3	1	466	38	1	506	8	0	4	2	14	865
Total	10	1331	25	2	1368	1	1	1	12	15	2	1946	138	1	2087	35	0	22	9	66	3536
06:00 PM	5	302	4	0	311	0	0	0	0	0	2	427	32	0	461	5	1	6	0	12	784
06:15 PM	1	309	7	1	318	1	0	0	1	2	0	431	24	0	455	5	0	4	6	15	790
06:30 PM	5	281	7	0	293	0	0	0	2	2	0	393	36	2	431	1	0	6	0	7	733
06:45 PM	4	255	8	3	270	1	1	0	2	4	0	332	40	2	374	9	1	4	2	16	664
Total	15	1147	26	4	1192	2	1	0	5	8	2	1583	132	4	1721	20	2	20	8	50	2971
Grand Total	36	3664	70	8	3778	8	2	5	21	36	6	5162	399	5	5572	83	2	63	32	180	9566
Apprch %	1	97	1.9	0.2		22.2	5.6	13.9	58.3		0.1	92.6	7.2	0.1		46.1	1.1	35	17.8		
Total %	0.4	38.3	0.7	0.1	39.5	0.1	0	0.1	0.2	0.4	0.1	54	4.2	0.1	58.2	0.9	0	0.7	0.3	1.9	

	EL CAMINO REAL Southbound				DRIVEWAY Westbound				EL CAMINO REAL Northbound				CAMBRIDGE AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**349**	6	355	0	0	0	0	0	415	32	447	8	0	6	14	816
05:15 PM	2	308	4	314	0	0	0	0	**1**	**539**	**40**	**580**	7	0	**8**	15	909
05:30 PM	**8**	343	5	**356**	**1**	0	0	1	0	526	28	554	**12**	0	4	**16**	**927**
05:45 PM	0	331	**10**	341	0	**1**	**1**	**2**	1	466	38	505	8	0	4	12	860
Total Volume	10	1331	25	1366	1	1	1	3	2	1946	138	2086	35	0	22	57	3512
% App. Total	0.7	97.4	1.8		33.3	33.3	33.3		0.1	93.3	6.6		61.4	0	38.6		
PHF	.313	.953	.625	.959	.250	.250	.250	.375	.500	.903	.863	.899	.729	.000	.688	.891	.947

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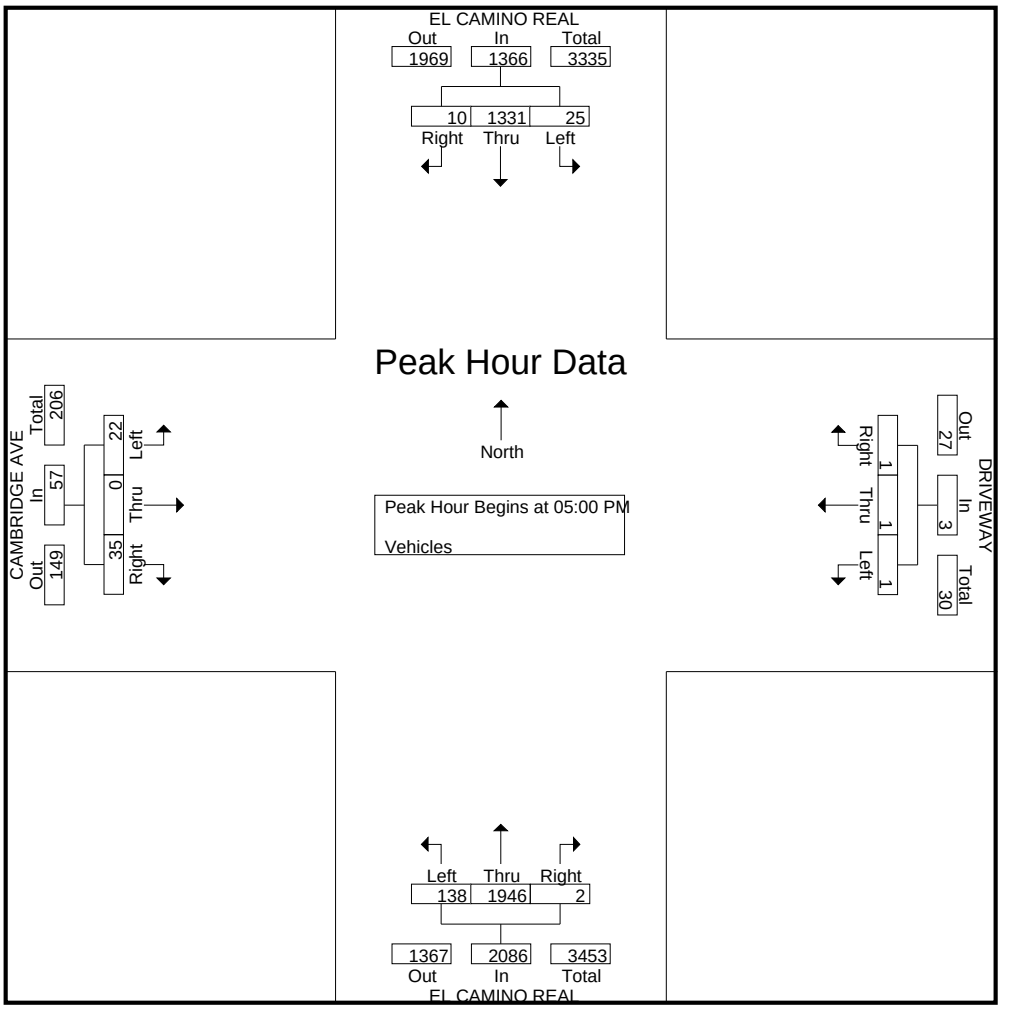

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Groups Printed- Vehicles

	DRIVEWAY Southbound					VALPARAISO AVE Westbound					UNIVERSITY DR Northbound					VALPARAISO AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	1	1	2	5	42	5	0	52	7	1	7	1	16	7	29	1	1	38	108
07:15 AM	1	1	0	2	4	8	57	12	0	77	5	1	6	1	13	14	53	11	2	80	174
07:30 AM	1	1	1	3	6	6	99	10	0	115	4	3	11	2	20	12	51	3	2	68	209
07:45 AM	5	1	5	3	14	5	138	5	0	148	6	4	11	3	24	25	85	17	2	129	315
Total	7	3	7	9	26	24	336	32	0	392	22	9	35	7	73	58	218	32	7	315	806
08:00 AM	10	8	4	8	30	10	132	8	0	150	16	14	21	7	58	32	100	19	15	166	404
08:15 AM	20	17	19	2	58	19	111	9	0	139	13	27	17	5	62	27	85	29	21	162	421
08:30 AM	41	18	25	1	85	20	76	11	0	107	6	50	11	11	78	28	86	78	38	230	500
08:45 AM	22	15	16	0	53	9	94	18	0	121	7	9	17	3	36	25	81	5	3	114	324
Total	93	58	64	11	226	58	413	46	0	517	42	100	66	26	234	112	352	131	77	672	1649
09:00 AM	2	1	0	1	4	4	86	13	0	103	12	2	7	3	24	14	73	1	2	90	221
09:15 AM	0	1	0	0	1	1	70	11	0	82	7	0	15	4	26	17	78	1	3	99	208
09:30 AM	1	0	0	0	1	3	67	9	0	79	5	1	15	0	21	20	73	0	2	95	196
09:45 AM	2	2	1	0	5	2	74	9	0	85	9	0	15	2	26	21	75	3	3	102	218
Total	5	4	1	1	11	10	297	42	0	349	33	3	52	9	97	72	299	5	10	386	843
Grand Total	105	65	72	21	263	92	1046	120	0	1258	97	112	153	42	404	242	869	168	94	1373	3298
Apprch %	39.9	24.7	27.4	8		7.3	83.1	9.5	0		24	27.7	37.9	10.4		17.6	63.3	12.2	6.8		
Total %	3.2	2	2.2	0.6	8	2.8	31.7	3.6	0	38.1	2.9	3.4	4.6	1.3	12.2	7.3	26.3	5.1	2.9	41.6	

	DRIVEWAY Southbound				VALPARAISO AVE Westbound				UNIVERSITY DR Northbound				VALPARAISO AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	10	8	4	22	10	**132**	8	**150**	**16**	14	**21**	51	**32**	**100**	19	151	374
08:15 AM	20	17	19	56	19	111	9	139	13	27	17	57	27	85	29	141	393
08:30 AM	**41**	**18**	**25**	**84**	**20**	76	11	107	6	**50**	11	**67**	28	86	**78**	**192**	**450**
08:45 AM	22	15	16	53	9	94	**18**	121	7	9	17	33	25	81	5	111	318
Total Volume	93	58	64	215	58	413	46	517	42	100	66	208	112	352	131	595	1535
% App. Total	43.3	27	29.8		11.2	79.9	8.9		20.2	48.1	31.7		18.8	59.2	22		
PHF	.567	.806	.640	.640	.725	.782	.639	.862	.656	.500	.786	.776	.875	.880	.420	.775	.853

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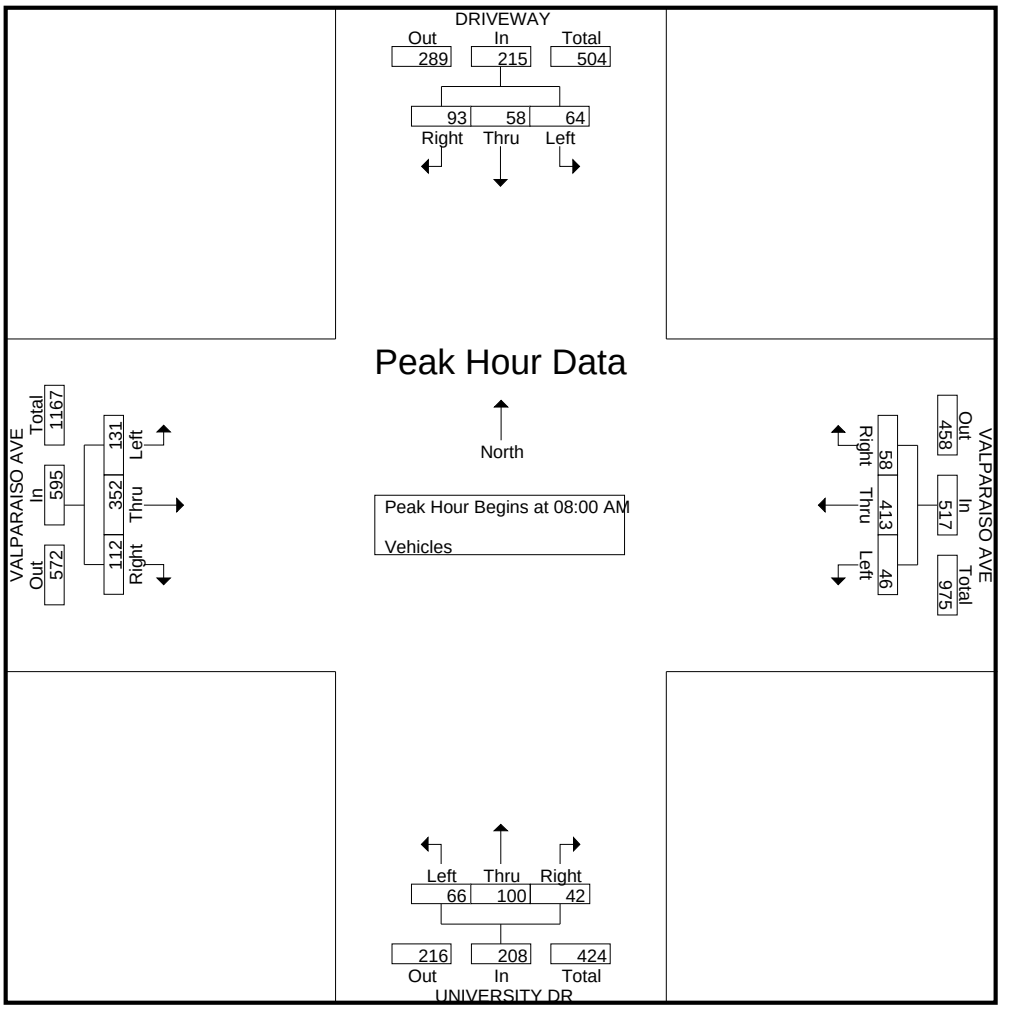

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File Name : 10PM FINAL
Site Code : 00000010
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Groups Printed- Vehicles

	DRIVEWAY Southbound					VALPARAISO AVE Westbound					UNIVERSITY DR Northbound					VALPARAISO AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	19	11	12	0	42	14	109	9	0	132	10	2	31	9	52	18	92	5	11	126	352
04:15 PM	12	7	9	1	29	14	77	8	1	100	11	5	28	13	57	21	80	5	10	116	302
04:30 PM	17	10	11	1	39	12	73	8	1	94	21	2	31	8	62	15	76	2	3	96	291
04:45 PM	12	8	22	3	45	25	106	8	0	139	12	4	27	6	49	23	86	20	6	135	368
Total	60	36	54	5	155	65	365	33	2	465	54	13	117	36	220	77	334	32	30	473	1313
05:00 PM	23	10	17	1	51	18	109	16	1	144	8	7	44	1	60	14	97	14	4	129	384
05:15 PM	11	5	4	0	20	13	80	13	0	106	10	5	19	6	40	17	85	13	7	122	288
05:30 PM	12	7	10	0	29	11	100	6	0	117	15	3	25	8	51	19	71	13	9	112	309
05:45 PM	14	7	17	2	40	8	99	10	0	117	10	2	28	2	42	31	56	15	3	105	304
Total	60	29	48	3	140	50	388	45	1	484	43	17	116	17	193	81	309	55	23	468	1285
06:00 PM	17	1	9	3	30	6	84	9	0	99	5	1	30	3	39	12	74	8	1	95	263
06:15 PM	15	2	9	1	27	10	79	5	1	95	9	3	19	4	35	16	68	9	5	98	255
06:30 PM	10	3	8	0	21	14	65	5	0	84	5	8	12	2	27	23	52	23	6	104	236
06:45 PM	12	3	4	0	19	27	59	7	0	93	4	8	13	3	28	11	43	25	3	82	222
Total	54	9	30	4	97	57	287	26	1	371	23	20	74	12	129	62	237	65	15	379	976
Grand Total	174	74	132	12	392	172	1040	104	4	1320	120	50	307	65	542	220	880	152	68	1320	3574
Apprch %	44.4	18.9	33.7	3.1		13	78.8	7.9	0.3		22.1	9.2	56.6	12		16.7	66.7	11.5	5.2		
Total %	4.9	2.1	3.7	0.3	11	4.8	29.1	2.9	0.1	36.9	3.4	1.4	8.6	1.8	15.2	6.2	24.6	4.3	1.9	36.9	

	DRIVEWAY Southbound				VALPARAISO AVE Westbound				UNIVERSITY DR Northbound				VALPARAISO AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	12	8	**22**	42	**25**	106	8	139	12	4	27	43	**23**	86	**20**	**129**	353
05:00 PM	**23**	**10**	17	**50**	18	**109**	**16**	**143**	8	**7**	**44**	**59**	14	**97**	14	125	**377**
05:15 PM	11	5	4	20	13	80	13	106	10	5	19	34	17	85	13	115	275
05:30 PM	12	7	10	29	11	100	6	117	**15**	3	25	43	19	71	13	103	292
Total Volume	58	30	53	141	67	395	43	505	45	19	115	179	73	339	60	472	1297
% App. Total	41.1	21.3	37.6		13.3	78.2	8.5		25.1	10.6	64.2		15.5	71.8	12.7		
PHF	.630	.750	.602	.705	.670	.906	.672	.883	.750	.679	.653	.758	.793	.874	.750	.915	.860

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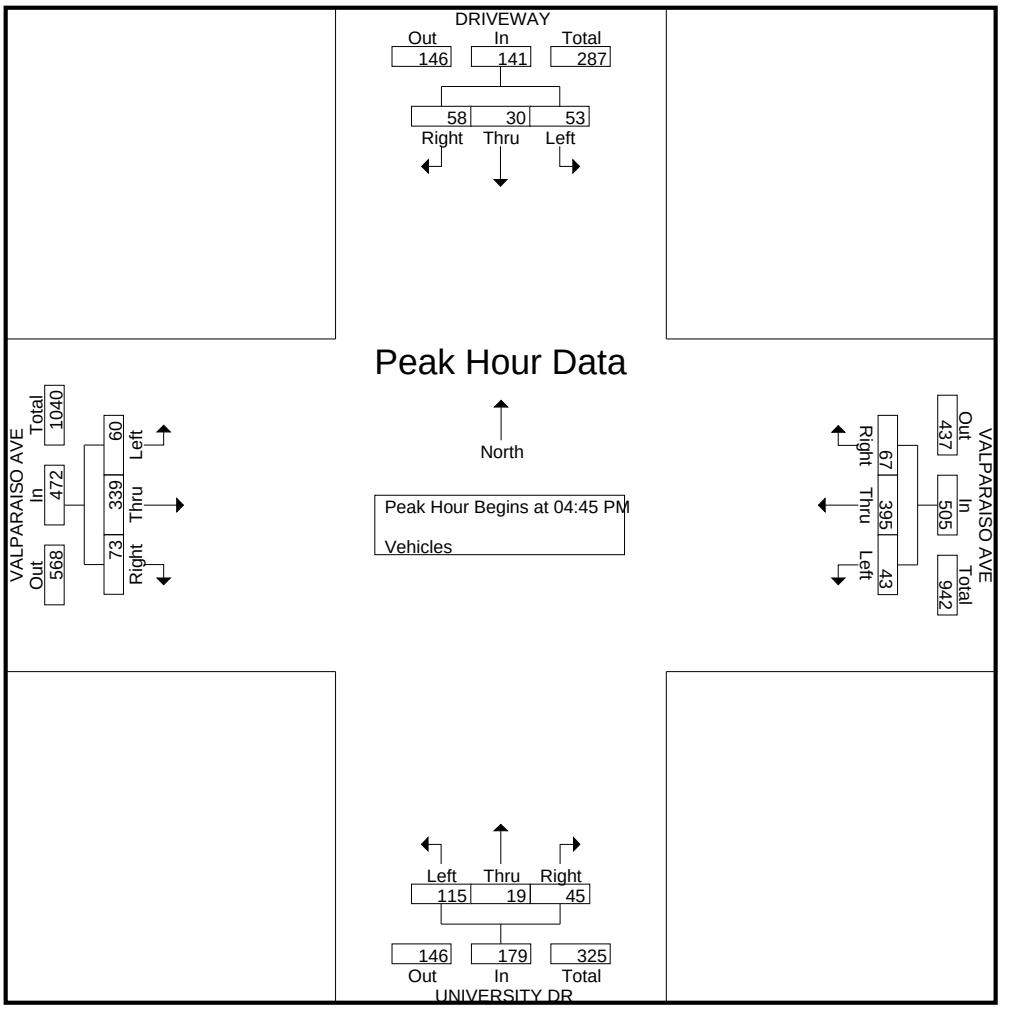

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Groups Printed- Vehicles

	Southbound					SANTA CRUZ AVE Westbound					UNIVERSITY DR Northbound					SANTA CRUZ AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	25	3	0	28	11	0	17	6	34	20	32	0	0	52	114
07:15 AM	0	0	0	0	0	0	35	3	3	41	11	0	30	3	44	39	40	0	1	80	165
07:30 AM	0	0	0	0	0	0	49	2	0	51	11	0	39	10	60	47	43	0	1	91	202
07:45 AM	0	0	0	0	0	0	58	12	11	81	11	0	60	2	73	65	79	0	0	144	298
Total	0	0	0	0	0	0	167	20	14	201	44	0	146	21	211	171	194	0	2	367	779
08:00 AM	0	0	0	0	0	0	70	12	3	85	22	0	72	6	100	91	102	0	0	193	378
08:15 AM	0	0	0	0	0	0	69	15	8	92	25	0	58	15	98	96	105	0	0	201	391
08:30 AM	0	0	0	0	0	0	67	22	6	95	23	0	45	8	76	77	93	0	0	170	341
08:45 AM	0	0	0	0	0	0	56	28	6	90	20	0	49	9	78	84	78	0	0	162	330
Total	0	0	0	0	0	0	262	77	23	362	90	0	224	38	352	348	378	0	0	726	1440
09:00 AM	0	0	0	0	0	0	61	20	1	82	15	0	46	1	62	58	61	0	0	119	263
09:15 AM	0	0	0	0	0	0	47	12	7	66	14	0	38	7	59	62	67	0	0	129	254
09:30 AM	0	0	0	0	0	0	46	10	8	64	18	0	33	6	57	44	69	0	0	113	234
09:45 AM	0	0	0	0	0	0	48	15	3	66	17	0	39	2	58	59	79	0	0	138	262
Total	0	0	0	0	0	0	202	57	19	278	64	0	156	16	236	223	276	0	0	499	1013
Grand Total	0	0	0	0	0	0	631	154	56	841	198	0	526	75	799	742	848	0	2	1592	3232
Apprch %	0	0	0	0		0	75	18.3	6.7		24.8	0	65.8	9.4		46.6	53.3	0	0.1		
Total %	0	0	0	0	0	0	19.5	4.8	1.7	26	6.1	0	16.3	2.3	24.7	23	26.2	0	0.1	49.3	

	Southbound				SANTA CRUZ AVE Westbound				UNIVERSITY DR Northbound				SANTA CRUZ AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	**70**	12	82	22	0	**72**	**94**	91	102	0	193	**369**
08:15 AM	0	0	0	0	0	69	15	84	**25**	0	58	83	**96**	**105**	0	**201**	368
08:30 AM	0	0	0	0	0	67	22	**89**	23	0	45	68	77	93	0	170	327
08:45 AM	0	0	0	0	0	56	**28**	84	20	0	49	69	84	78	0	162	315
Total Volume	0	0	0	0	0	262	77	339	90	0	224	314	348	378	0	726	1379
% App. Total	0	0	0		0	77.3	22.7		28.7	0	71.3		47.9	52.1	0		
PHF	.000	.000	.000	.000	.000	.936	.688	.952	.900	.000	.778	.835	.906	.900	.000	.903	.934

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File Name : 11AM FINAL
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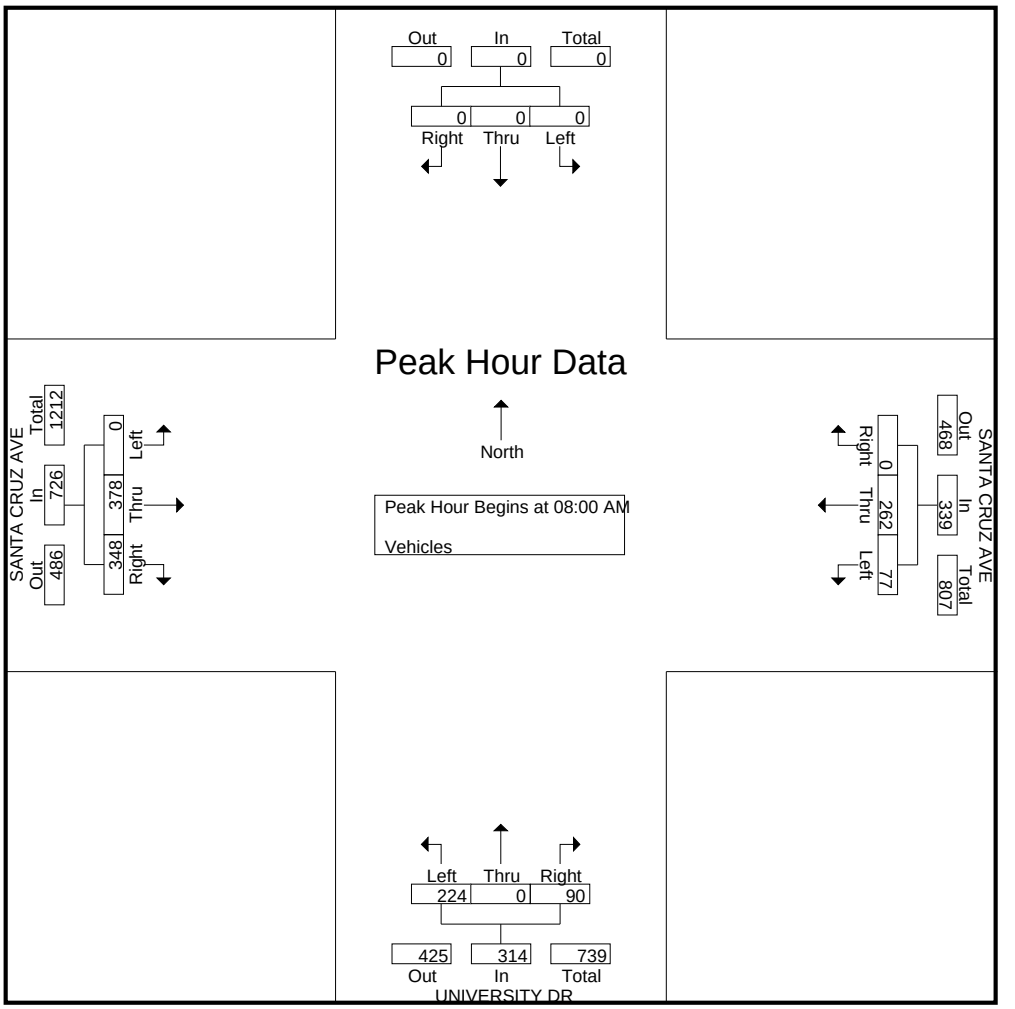

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File Name : 11PM FINAL
Site Code : 00000011
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Groups Printed- Vehicles

	Southbound					SANTA CRUZ AVE Westbound					UNIVERSITY DR Northbound					SANTA CRUZ AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	80	15	4	99	25	0	66	2	93	77	61	0	0	138	330
04:15 PM	0	0	0	0	0	0	95	19	5	119	23	0	58	11	92	73	60	0	0	133	344
04:30 PM	0	0	0	0	0	0	74	18	6	98	31	0	56	6	93	65	62	0	0	127	318
04:45 PM	0	0	0	0	0	0	99	17	3	119	22	0	64	7	93	73	76	0	0	149	361
Total	0	0	0	0	0	0	348	69	18	435	101	0	244	26	371	288	259	0	0	547	1353
05:00 PM	0	0	0	0	0	0	109	23	1	133	25	0	78	6	109	93	70	0	0	163	405
05:15 PM	0	0	0	0	0	0	78	19	5	102	12	0	64	7	83	86	74	0	0	160	345
05:30 PM	0	0	0	0	0	0	73	19	1	93	15	0	84	9	108	61	54	0	0	115	316
05:45 PM	0	0	0	0	0	0	82	19	6	107	24	0	61	14	99	55	52	0	0	107	313
Total	0	0	0	0	0	0	342	80	13	435	76	0	287	36	399	295	250	0	0	545	1379
06:00 PM	0	0	0	0	0	0	64	15	5	84	10	0	53	4	67	61	41	0	0	102	253
06:15 PM	0	0	0	0	0	0	64	7	3	74	13	0	52	4	69	66	55	0	0	121	264
06:30 PM	0	0	0	0	0	0	68	7	0	75	11	0	48	4	63	45	45	0	0	90	228
06:45 PM	0	0	0	0	0	0	66	11	4	81	11	0	54	5	70	50	51	0	0	101	252
Total	0	0	0	0	0	0	262	40	12	314	45	0	207	17	269	222	192	0	0	414	997
Grand Total	0	0	0	0	0	0	952	189	43	1184	222	0	738	79	1039	805	701	0	0	1506	3729
Apprch %	0	0	0	0		0	80.4	16	3.6		21.4	0	71	7.6		53.5	46.5	0	0		
Total %	0	0	0	0	0	0	25.5	5.1	1.2	31.8	6	0	19.8	2.1	27.9	21.6	18.8	0	0	40.4	

	Southbound				SANTA CRUZ AVE Westbound				UNIVERSITY DR Northbound				SANTA CRUZ AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	74	18	92	**31**	0	56	87	65	62	0	127	306
04:45 PM	0	0	0	0	0	99	17	116	22	0	64	86	73	**76**	0	149	351
05:00 PM	0	0	0	0	0	**109**	**23**	**132**	25	0	**78**	**103**	**93**	70	0	**163**	**398**
05:15 PM	0	0	0	0	0	78	19	97	12	0	64	76	86	74	0	160	333
Total Volume	0	0	0	0	0	360	77	437	90	0	262	352	317	282	0	599	1388
% App. Total	0	0	0		0	82.4	17.6		25.6	0	74.4		52.9	47.1	0		
PHF	.000	.000	.000	.000	.000	.826	.837	.828	.726	.000	.840	.854	.852	.928	.000	.919	.872

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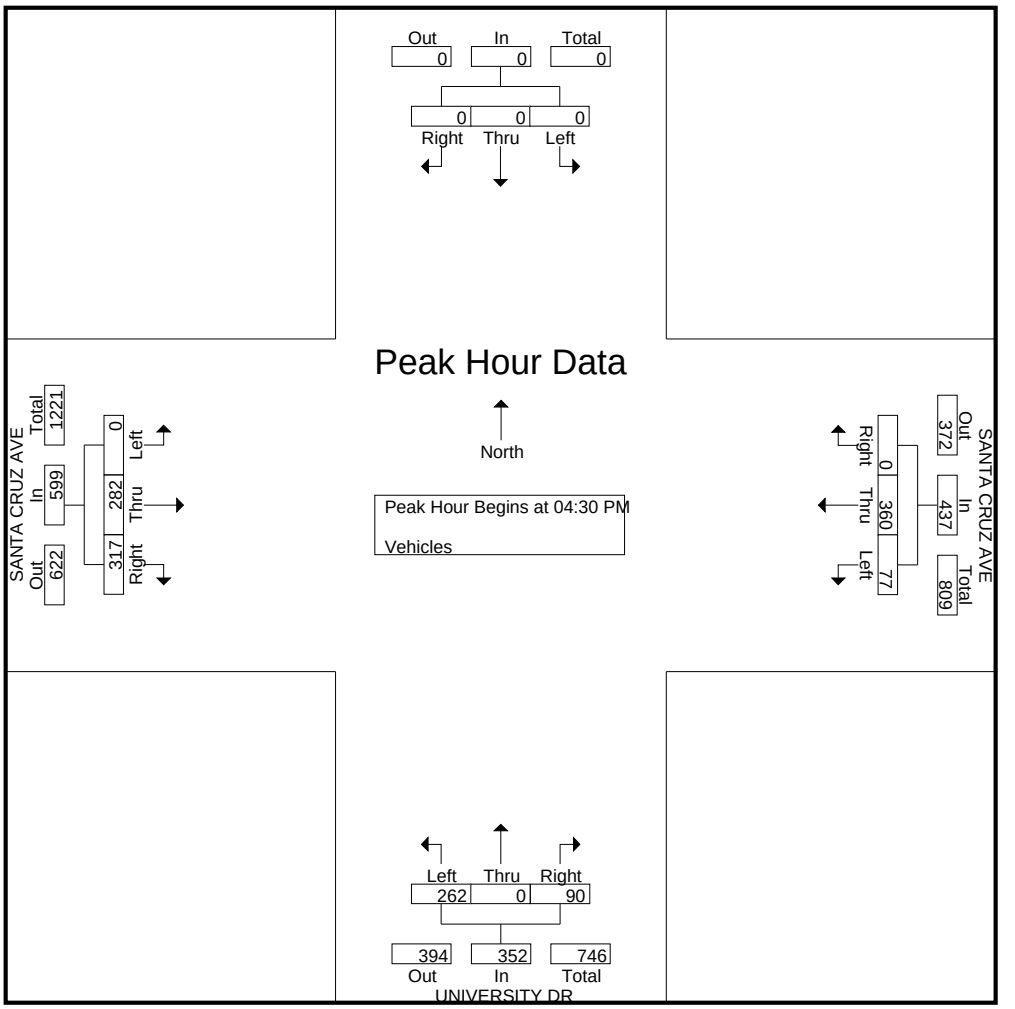

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File Name : 64AM FINAL
Site Code : 00000064
Start Date : 3/16/2023
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Groups Printed- Vehicles

	ORANGE AVE Southbound					SANTA CRUZ AVE Westbound					SANTA CRUZ AVE Northbound					AVY AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	5	0	0	5	0	14	17	0	31	29	14	0	1	44	0	13	1	0	14	94
07:15 AM	2	14	2	1	19	1	20	29	0	50	50	13	0	2	65	1	24	0	0	25	159
07:30 AM	2	12	1	0	15	3	28	39	0	70	55	24	3	0	82	0	27	0	0	27	194
07:45 AM	0	41	8	0	49	4	42	45	1	92	107	33	2	1	143	9	33	2	1	45	329
Total	4	72	11	1	88	8	104	130	1	243	241	84	5	4	334	10	97	3	1	111	776
08:00 AM	4	37	4	2	47	2	40	48	1	91	93	57	9	0	159	4	54	4	0	62	359
08:15 AM	5	35	3	0	43	5	37	59	0	101	79	52	6	0	137	8	60	4	1	73	354
08:30 AM	2	54	6	1	63	2	26	54	0	82	77	26	1	1	105	2	61	1	1	65	315
08:45 AM	4	31	2	0	37	3	44	62	0	109	100	16	0	1	117	5	51	2	0	58	321
Total	15	157	15	3	190	12	147	223	1	383	349	151	16	2	518	19	226	11	2	258	1349
09:00 AM	0	12	5	0	17	4	40	60	0	104	79	13	3	2	97	3	50	2	3	58	276
09:15 AM	1	14	2	1	18	2	32	49	0	83	97	12	2	0	111	3	42	3	1	49	261
09:30 AM	1	14	0	1	16	3	30	47	0	80	73	14	1	3	91	5	30	1	0	36	223
09:45 AM	2	19	3	0	24	3	36	45	0	84	85	11	2	4	102	1	41	1	1	44	254
Total	4	59	10	2	75	12	138	201	0	351	334	50	8	9	401	12	163	7	5	187	1014
Grand Total	23	288	36	6	353	32	389	554	2	977	924	285	29	15	1253	41	486	21	8	556	3139
Apprch %	6.5	81.6	10.2	1.7		3.3	39.8	56.7	0.2		73.7	22.7	2.3	1.2		7.4	87.4	3.8	1.4		
Total %	0.7	9.2	1.1	0.2	11.2	1	12.4	17.6	0.1	31.1	29.4	9.1	0.9	0.5	39.9	1.3	15.5	0.7	0.3	17.7	

	ORANGE AVE Southbound				SANTA CRUZ AVE Westbound				SANTA CRUZ AVE Northbound				AVY AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	41	**8**	49	4	**42**	45	91	**107**	33	2	142	**9**	33	2	44	326
08:00 AM	4	37	4	45	2	40	48	90	93	**57**	**9**	**159**	4	54	**4**	62	**356**
08:15 AM	**5**	35	3	43	**5**	37	**59**	**101**	79	52	6	137	8	60	4	**72**	353
08:30 AM	2	**54**	6	**62**	2	26	54	82	77	26	1	104	2	**61**	1	64	312
Total Volume	11	167	21	199	13	145	206	364	356	168	18	542	23	208	11	242	1347
% App. Total	5.5	83.9	10.6		3.6	39.8	56.6		65.7	31	3.3		9.5	86	4.5		
PHF	.550	.773	.656	.802	.650	.863	.873	.901	.832	.737	.500	.852	.639	.852	.688	.840	.946

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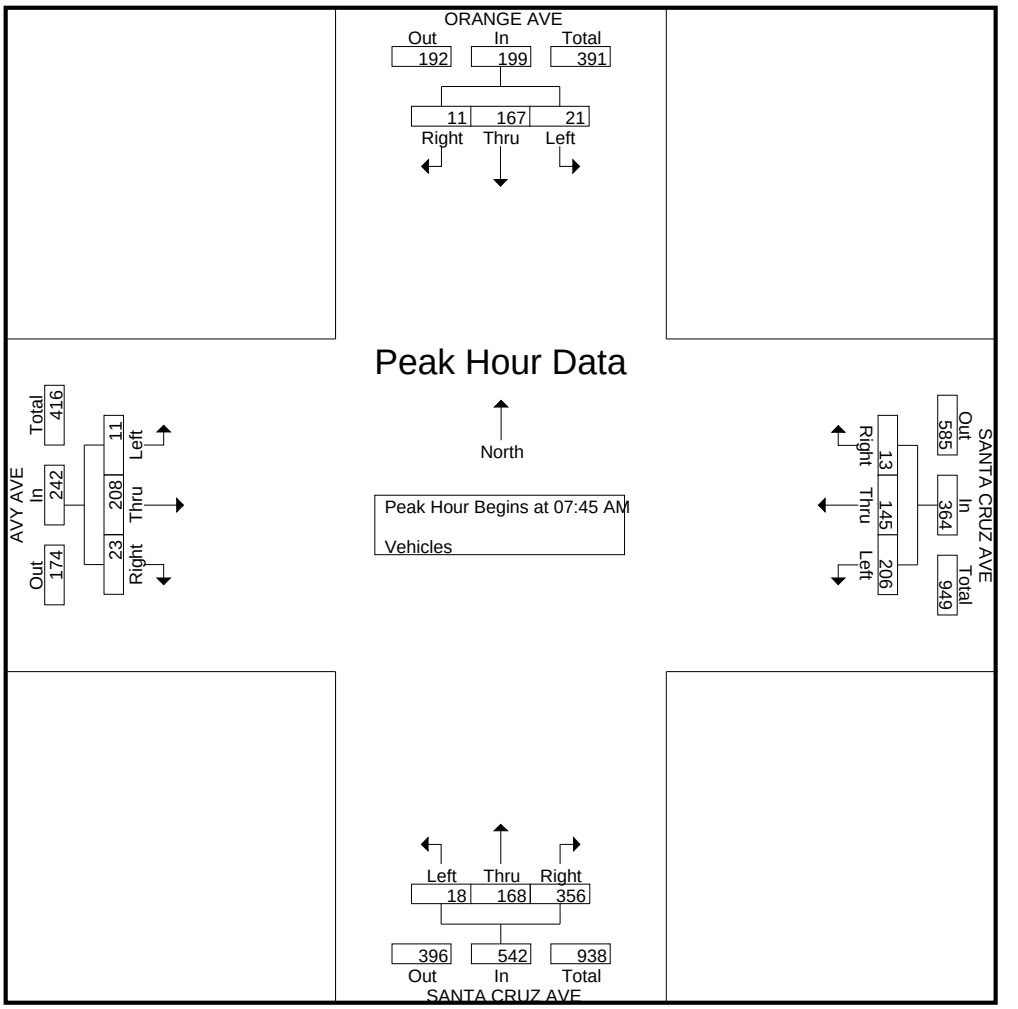

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File Name : 64PM FINAL
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Groups Printed- Vehicles

	ORANGE AVE Southbound					SANTA CRUZ AVE Westbound					SANTA CRUZ AVE Northbound					AVY AVE Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	30	4	0	34	2	69	72	0	143	70	28	5	1	104	2	38	1	0	41	322
04:15 PM	3	20	4	0	27	3	56	77	0	136	79	20	7	0	106	1	44	5	1	51	320
04:30 PM	1	21	7	1	30	1	56	87	0	144	79	28	6	4	117	1	32	3	0	36	327
04:45 PM	1	18	2	3	24	4	50	72	0	126	66	25	6	0	97	1	33	0	1	35	282
Total	5	89	17	4	115	10	231	308	0	549	294	101	24	5	424	5	147	9	2	163	1251
05:00 PM	3	18	6	1	28	4	46	88	0	138	89	21	5	2	117	2	41	5	1	49	332
05:15 PM	0	13	3	1	17	9	43	101	1	154	87	22	4	1	114	5	61	2	0	68	353
05:30 PM	3	19	1	0	23	3	53	79	0	135	74	26	3	1	104	4	42	1	0	47	309
05:45 PM	0	20	1	1	22	5	50	62	2	119	82	36	8	0	126	4	34	1	1	40	307
Total	6	70	11	3	90	21	192	330	3	546	332	105	20	4	461	15	178	9	2	204	1301
06:00 PM	2	13	3	1	19	6	49	51	1	107	102	34	4	0	140	3	45	3	0	51	317
06:15 PM	0	16	6	0	22	1	41	56	0	98	79	19	1	2	101	3	39	0	3	45	266
06:30 PM	0	12	5	0	17	1	43	45	0	89	66	16	3	3	88	1	39	0	0	40	234
06:45 PM	1	7	0	1	9	5	36	35	1	77	73	14	3	1	91	0	43	2	2	47	224
Total	3	48	14	2	67	13	169	187	2	371	320	83	11	6	420	7	166	5	5	183	1041
Grand Total	14	207	42	9	272	44	592	825	5	1466	946	289	55	15	1305	27	491	23	9	550	3593
Apprch %	5.1	76.1	15.4	3.3		3	40.4	56.3	0.3		72.5	22.1	4.2	1.1		4.9	89.3	4.2	1.6		
Total %	0.4	5.8	1.2	0.3	7.6	1.2	16.5	23	0.1	40.8	26.3	8	1.5	0.4	36.3	0.8	13.7	0.6	0.3	15.3	

	ORANGE AVE Southbound				SANTA CRUZ AVE Westbound				SANTA CRUZ AVE Northbound				AVY AVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**3**	18	**6**	**27**	4	46	88	138	**89**	21	5	115	2	41	**5**	48	328
05:15 PM	0	13	3	16	**9**	43	**101**	**153**	87	22	4	113	**5**	**61**	2	**68**	**350**
05:30 PM	3	19	1	23	3	**53**	79	135	74	26	3	103	4	42	1	47	308
05:45 PM	0	**20**	1	21	5	50	62	117	82	**36**	**8**	**126**	4	34	1	39	303
Total Volume	6	70	11	87	21	192	330	543	332	105	20	457	15	178	9	202	1289
% App. Total	6.9	80.5	12.6		3.9	35.4	60.8		72.6	23	4.4		7.4	88.1	4.5		
PHF	.500	.875	.458	.806	.583	.906	.817	.887	.933	.729	.625	.907	.750	.730	.450	.743	.921

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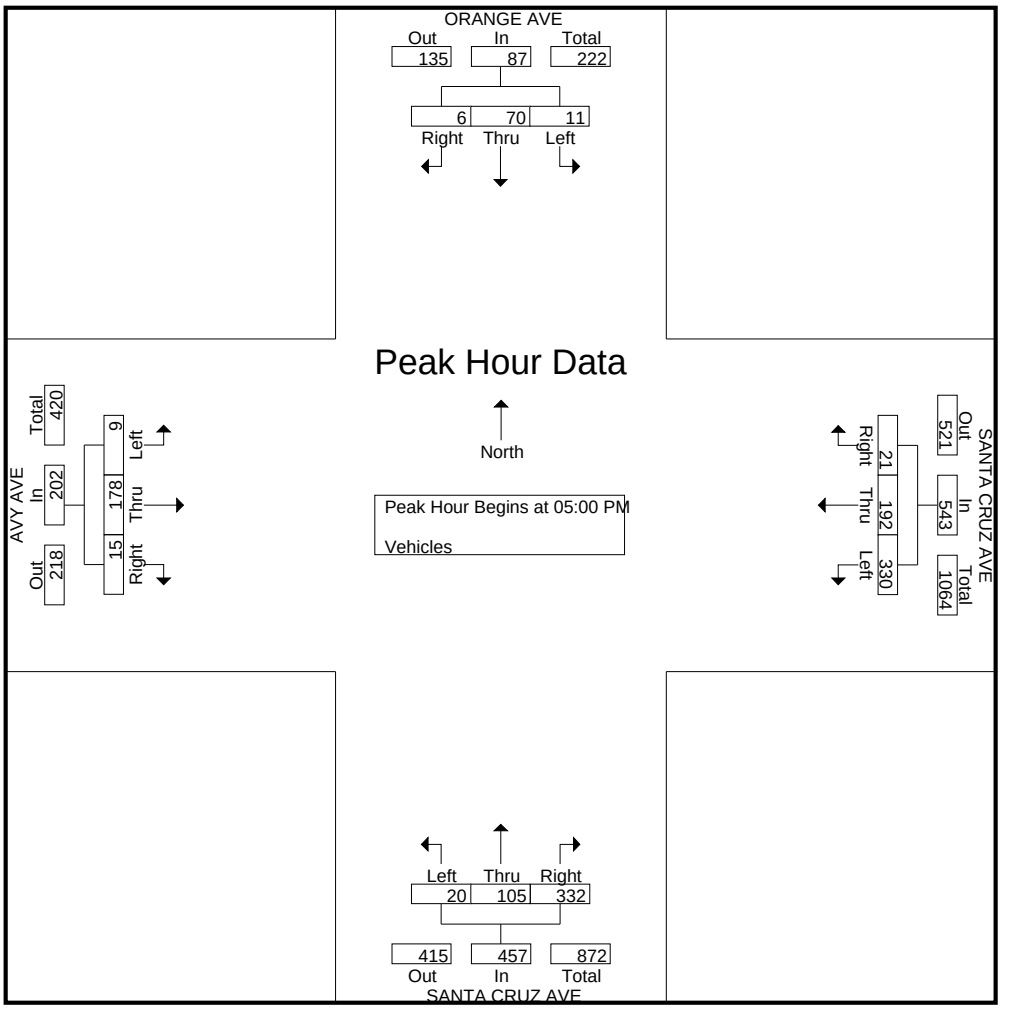

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File Name : 6AM FINAL
Site Code : 00000006
Start Date : 3/16/2023
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Groups Printed- Vehicles

	SANTA CRUZ AVE Southbound					SAND HILL RD Westbound					SANTA CRUZ AVE Northbound					SAND HILL RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	16	33	16	1	66	8	50	31	0	89	81	91	7	0	179	18	128	14	0	160	494
07:15 AM	21	48	19	1	89	8	53	36	0	97	110	122	11	0	243	20	150	23	0	193	622
07:30 AM	41	82	29	0	152	10	123	76	0	209	107	136	15	0	258	27	166	36	0	229	848
07:45 AM	37	86	31	2	156	12	166	70	0	248	81	136	24	0	241	54	216	70	0	340	985
Total	115	249	95	4	463	38	392	213	0	643	379	485	57	0	921	119	660	143	0	922	2949
08:00 AM	42	97	44	0	183	20	126	55	0	201	116	169	30	0	315	26	227	62	1	316	1015
08:15 AM	37	145	53	5	240	11	83	77	0	171	104	151	31	0	286	40	222	59	0	321	1018
08:30 AM	57	170	50	1	278	10	97	47	0	154	102	116	24	0	242	51	249	63	0	363	1037
08:45 AM	54	158	67	0	279	14	75	61	0	150	133	120	25	2	280	28	187	46	0	261	970
Total	190	570	214	6	980	55	381	240	0	676	455	556	110	2	1123	145	885	230	1	1261	4040
09:00 AM	41	119	41	0	201	20	100	54	1	175	149	105	16	2	272	35	248	36	0	319	967
09:15 AM	38	81	34	4	157	13	80	45	0	138	127	114	27	3	271	55	232	54	1	342	908
09:30 AM	35	98	38	0	171	13	120	49	0	182	127	115	32	4	278	37	142	41	0	220	851
09:45 AM	42	91	43	3	179	18	64	45	1	128	125	97	21	3	246	47	156	46	0	249	802
Total	156	389	156	7	708	64	364	193	2	623	528	431	96	12	1067	174	778	177	1	1130	3528
Grand Total	461	1208	465	17	2151	157	1137	646	2	1942	1362	1472	263	14	3111	438	2323	550	2	3313	10517
Apprch %	21.4	56.2	21.6	0.8		8.1	58.5	33.3	0.1		43.8	47.3	8.5	0.5		13.2	70.1	16.6	0.1		
Total %	4.4	11.5	4.4	0.2	20.5	1.5	10.8	6.1	0	18.5	13	14	2.5	0.1	29.6	4.2	22.1	5.2	0	31.5	

	SANTA CRUZ AVE Southbound				SAND HILL RD Westbound				SANTA CRUZ AVE Northbound				SAND HILL RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	37	86	31	154	12	**166**	70	**248**	81	136	24	241	**54**	216	**70**	340	983
08:00 AM	42	97	44	183	**20**	126	55	201	**116**	**169**	30	**315**	26	227	62	315	1014
08:15 AM	37	145	**53**	235	11	83	**77**	171	104	151	**31**	286	40	222	59	321	1013
08:30 AM	**57**	**170**	50	**277**	10	97	47	154	102	116	24	242	51	**249**	63	**363**	**1036**
Total Volume	173	498	178	849	53	472	249	774	403	572	109	1084	171	914	254	1339	4046
% App. Total	20.4	58.7	21		6.8	61	32.2		37.2	52.8	10.1		12.8	68.3	19		
PHF	.759	.732	.840	.766	.663	.711	.808	.780	.869	.846	.879	.860	.792	.918	.907	.922	.976

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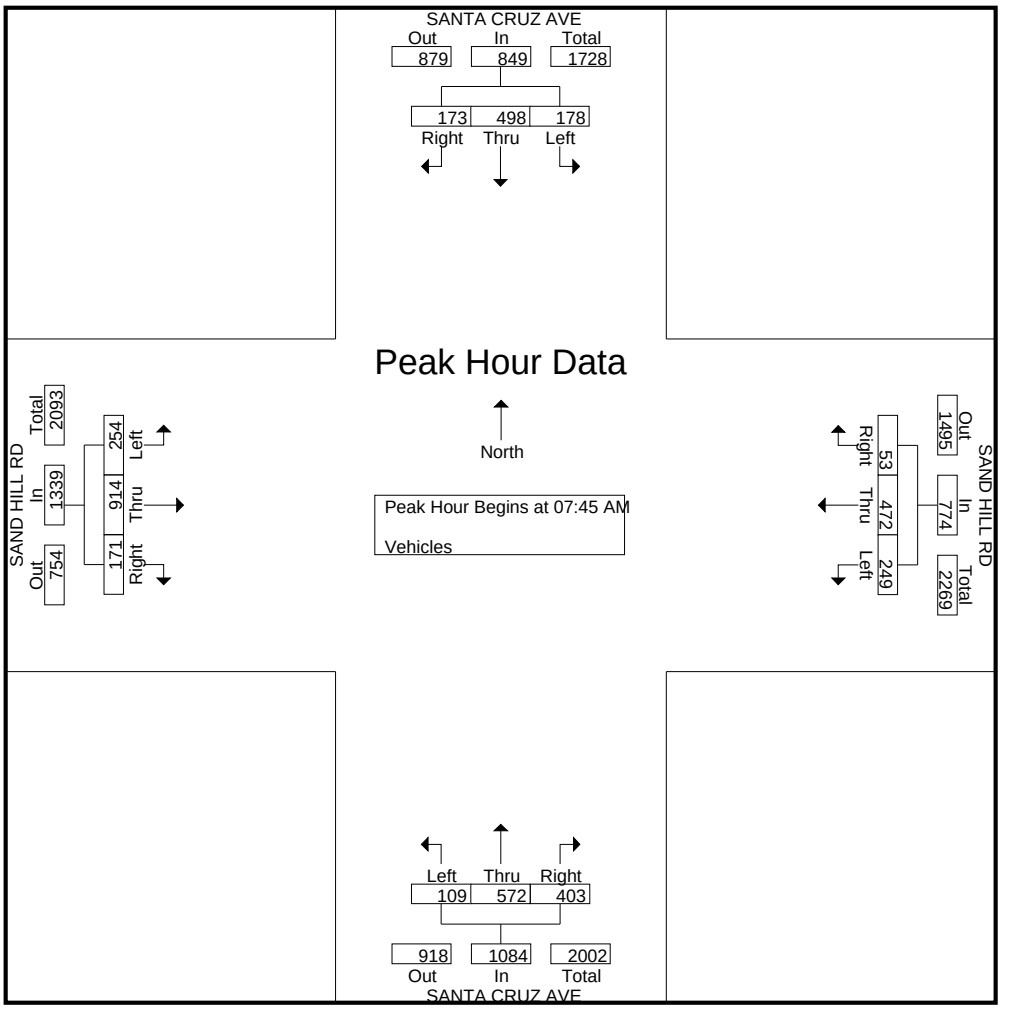

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File Name : 6PM FINAL
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Groups Printed- Vehicles

	SANTA CRUZ AVE Southbound					SAND HILL RD Westbound					SANTA CRUZ AVE Northbound					SAND HILL RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	70	124	24	0	218	21	192	81	1	295	67	139	109	0	315	21	99	57	0	177	1005
04:15 PM	59	133	29	0	221	27	190	55	1	273	67	134	112	0	313	36	102	69	0	207	1014
04:30 PM	45	116	28	0	189	38	234	61	0	333	59	155	76	0	290	33	96	56	0	185	997
04:45 PM	46	155	25	0	226	41	235	83	0	359	72	138	51	0	261	23	109	64	0	196	1042
Total	220	528	106	0	854	127	851	280	2	1260	265	566	348	0	1179	113	406	246	0	765	4058
05:00 PM	54	144	30	0	228	38	228	76	0	342	64	185	73	1	323	42	136	83	1	262	1155
05:15 PM	46	127	24	0	197	40	242	74	0	356	56	168	67	0	291	33	130	60	0	223	1067
05:30 PM	35	140	32	4	211	33	219	74	0	326	54	178	73	1	306	25	108	81	0	214	1057
05:45 PM	31	89	24	2	146	47	233	103	1	384	75	191	53	1	320	44	147	76	2	269	1119
Total	166	500	110	6	782	158	922	327	1	1408	249	722	266	3	1240	144	521	300	3	968	4398
06:00 PM	24	104	19	0	147	42	179	69	0	290	74	168	50	0	292	38	139	68	1	246	975
06:15 PM	25	108	27	0	160	36	207	74	0	317	88	152	61	1	302	31	152	44	0	227	1006
06:30 PM	23	94	21	0	138	41	184	101	0	326	85	135	43	2	265	37	124	48	2	211	940
06:45 PM	19	83	30	0	132	29	194	79	0	302	85	102	39	0	226	26	104	40	0	170	830
Total	91	389	97	0	577	148	764	323	0	1235	332	557	193	3	1085	132	519	200	3	854	3751
Grand Total	477	1417	313	6	2213	433	2537	930	3	3903	846	1845	807	6	3504	389	1446	746	6	2587	12207
Apprch %	21.6	64	14.1	0.3		11.1	65	23.8	0.1		24.1	52.7	23	0.2		15	55.9	28.8	0.2		
Total %	3.9	11.6	2.6	0	18.1	3.5	20.8	7.6	0	32	6.9	15.1	6.6	0	28.7	3.2	11.8	6.1	0	21.2	

	SANTA CRUZ AVE Southbound				SAND HILL RD Westbound				SANTA CRUZ AVE Northbound				SAND HILL RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**54**	**144**	30	**228**	38	228	76	342	64	185	**73**	**322**	42	136	**83**	261	**1153**
05:15 PM	46	127	24	197	40	**242**	74	356	56	168	67	291	33	130	60	223	1067
05:30 PM	35	140	**32**	207	33	219	74	326	54	178	73	305	25	108	81	214	1052
05:45 PM	31	89	24	144	**47**	233	**103**	**383**	**75**	**191**	53	319	**44**	**147**	76	**267**	1113
Total Volume	166	500	110	776	158	922	327	1407	249	722	266	1237	144	521	300	965	4385
% App. Total	21.4	64.4	14.2		11.2	65.5	23.2		20.1	58.4	21.5		14.9	54	31.1		
PHF	.769	.868	.859	.851	.840	.952	.794	.918	.830	.945	.911	.960	.818	.886	.904	.904	.951

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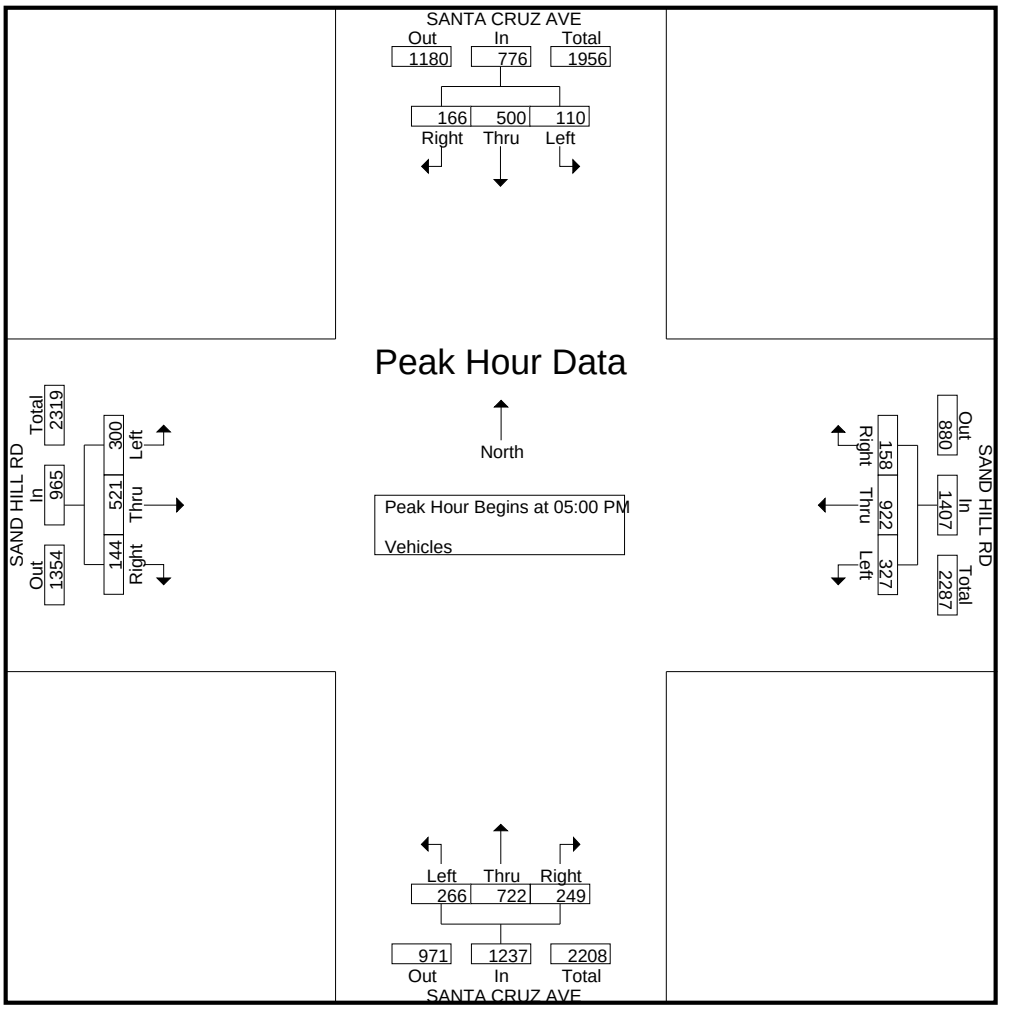

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Groups Printed- Vehicles

	SANTA CRUZ AVE Southbound					JUNIPERO SERRA BLVD Westbound					ALPINE RD Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	42	34	0	76	13	0	6	0	19	34	179	0	0	213	0	0	0	0	0	308
07:15 AM	0	69	30	0	99	24	0	13	0	37	60	243	0	0	303	0	0	0	0	0	439
07:30 AM	0	111	78	0	189	34	0	15	0	49	54	235	0	0	289	0	0	0	0	0	527
07:45 AM	0	125	105	0	230	34	0	12	0	46	79	257	0	0	336	0	0	0	0	0	612
Total	0	347	247	0	594	105	0	46	0	151	227	914	0	0	1141	0	0	0	0	0	1886
08:00 AM	0	114	87	0	201	67	0	11	0	78	113	247	0	0	360	0	0	0	0	0	639
08:15 AM	0	144	112	0	256	61	0	22	0	83	126	229	0	0	355	0	0	0	0	0	694
08:30 AM	0	134	141	0	275	50	0	20	0	70	157	201	0	0	358	0	0	0	0	0	703
08:45 AM	0	107	109	0	216	59	0	12	0	71	155	237	0	0	392	0	0	0	0	0	679
Total	0	499	449	0	948	237	0	65	0	302	551	914	0	0	1465	0	0	0	0	0	2715
09:00 AM	0	111	95	0	206	40	0	18	0	58	121	240	0	0	361	0	0	0	0	0	625
09:15 AM	0	110	107	0	217	49	0	25	0	74	118	247	0	0	365	0	0	0	0	0	656
09:30 AM	0	86	65	0	151	51	0	18	0	69	108	246	0	0	354	0	0	0	0	0	574
09:45 AM	0	144	74	0	218	37	0	17	0	54	104	216	0	0	320	0	0	0	0	0	592
Total	0	451	341	0	792	177	0	78	0	255	451	949	0	0	1400	0	0	0	0	0	2447
Grand Total	0	1297	1037	0	2334	519	0	189	0	708	1229	2777	0	0	4006	0	0	0	0	0	7048
Apprch %	0	55.6	44.4	0		73.3	0	26.7	0		30.7	69.3	0	0		0	0	0	0		
Total %	0	18.4	14.7	0	33.1	7.4	0	2.7	0	10	17.4	39.4	0	0	56.8	0	0	0	0	0	

	SANTA CRUZ AVE Southbound				JUNIPERO SERRA BLVD Westbound				ALPINE RD Northbound				Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	114	87	201	**67**	0	11	78	113	**247**	0	360	0	0	0	0	639
08:15 AM	0	**144**	112	256	61	0	**22**	**83**	126	229	0	355	0	0	0	0	694
08:30 AM	0	134	**141**	**275**	50	0	20	70	**157**	201	0	358	0	0	0	0	**703**
08:45 AM	0	107	109	216	59	0	12	71	155	237	0	**392**	0	0	0	0	679
Total Volume	0	499	449	948	237	0	65	302	551	914	0	1465	0	0	0	0	2715
% App. Total	0	52.6	47.4		78.5	0	21.5		37.6	62.4	0		0	0	0		
PHF	.000	.866	.796	.862	.884	.000	.739	.910	.877	.925	.000	.934	.000	.000	.000	.000	.966

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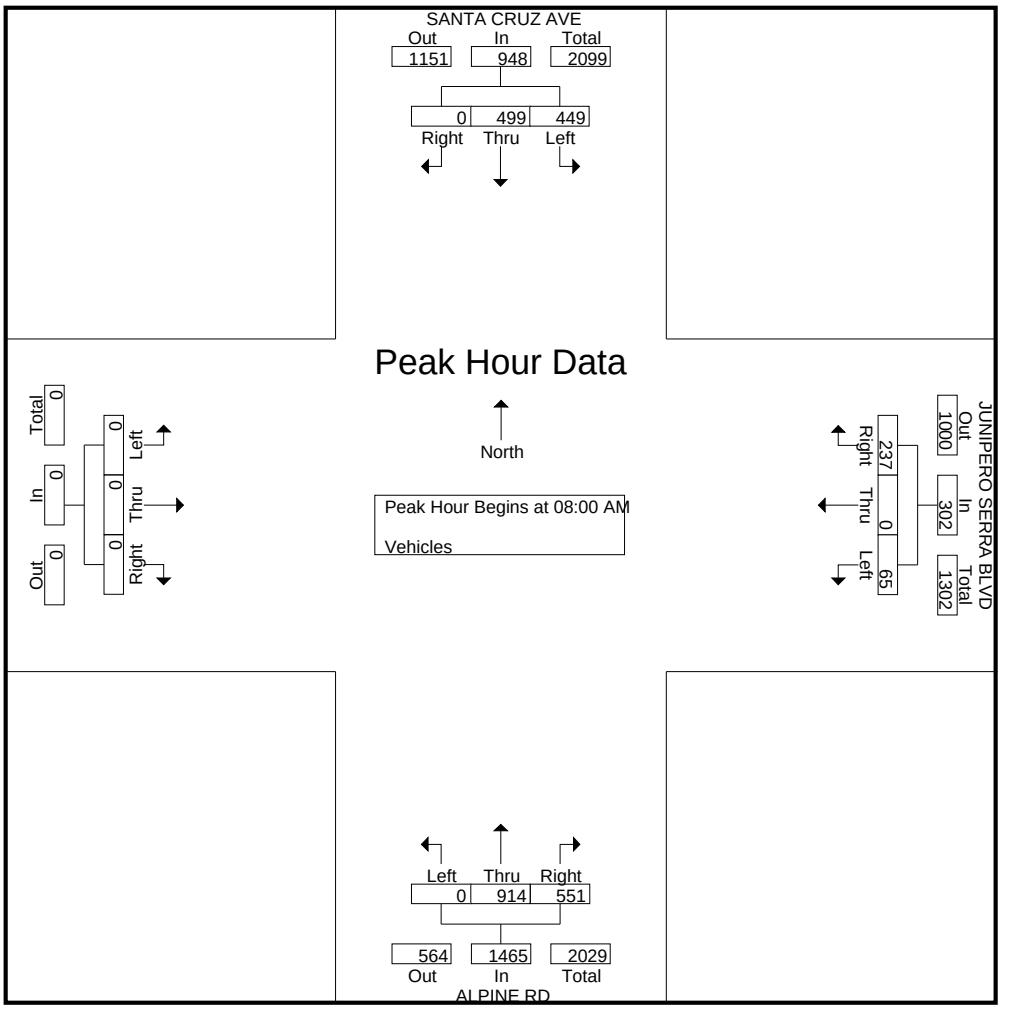

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Groups Printed- Vehicles

	SANTA CRUZ AVE Southbound					JUNIPERO SERRA BLVD Westbound					ALPINE RD Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	169	69	0	238	158	0	79	0	237	35	156	0	0	191	0	0	0	0	0	666
04:15 PM	0	160	76	0	236	145	0	91	0	236	23	145	0	0	168	0	0	0	0	0	640
04:30 PM	0	167	72	0	239	141	0	104	1	246	31	151	0	0	182	0	0	0	0	0	667
04:45 PM	0	178	68	0	246	110	0	106	0	216	27	149	0	0	176	0	0	0	0	0	638
Total	0	674	285	0	959	554	0	380	1	935	116	601	0	0	717	0	0	0	0	0	2611
05:00 PM	0	170	77	0	247	127	0	110	0	237	34	155	0	0	189	0	0	0	0	0	673
05:15 PM	0	176	68	0	244	145	0	103	0	248	29	152	0	0	181	0	0	0	0	0	673
05:30 PM	0	173	83	0	256	156	0	111	0	267	27	141	0	0	168	0	0	0	0	0	691
05:45 PM	0	168	68	0	236	131	0	101	1	233	49	156	0	0	205	0	0	0	0	0	674
Total	0	687	296	0	983	559	0	425	1	985	139	604	0	0	743	0	0	0	0	0	2711
06:00 PM	0	160	68	0	228	96	0	91	0	187	44	199	0	1	244	0	0	0	0	0	659
06:15 PM	0	148	59	0	207	135	0	106	0	241	43	160	0	0	203	0	0	0	0	0	651
06:30 PM	0	165	60	0	225	74	0	59	0	133	26	195	0	0	221	0	0	0	0	0	579
06:45 PM	0	137	59	0	196	87	0	62	0	149	28	134	0	0	162	0	0	0	0	0	507
Total	0	610	246	0	856	392	0	318	0	710	141	688	0	1	830	0	0	0	0	0	2396
Grand Total	0	1971	827	0	2798	1505	0	1123	2	2630	396	1893	0	1	2290	0	0	0	0	0	7718
Apprch %	0	70.4	29.6	0		57.2	0	42.7	0.1		17.3	82.7	0	0		0	0	0	0		
Total %	0	25.5	10.7	0	36.3	19.5	0	14.6	0	34.1	5.1	24.5	0	0	29.7	0	0	0	0	0	

	SANTA CRUZ AVE Southbound				JUNIPERO SERRA BLVD Westbound				ALPINE RD Northbound				Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	170	77	247	127	0	110	237	34	155	0	189	0	0	0	0	673
05:15 PM	0	**176**	68	244	145	0	103	248	29	152	0	181	0	0	0	0	673
05:30 PM	0	173	**83**	**256**	**156**	0	**111**	**267**	27	141	0	168	0	0	0	0	**691**
05:45 PM	0	168	68	236	131	0	101	232	**49**	**156**	0	**205**	0	0	0	0	673
Total Volume	0	687	296	983	559	0	425	984	139	604	0	743	0	0	0	0	2710
% App. Total	0	69.9	30.1		56.8	0	43.2		18.7	81.3	0		0	0	0		
PHF	.000	.976	.892	.960	.896	.000	.957	.921	.709	.968	.000	.906	.000	.000	.000	.000	.980

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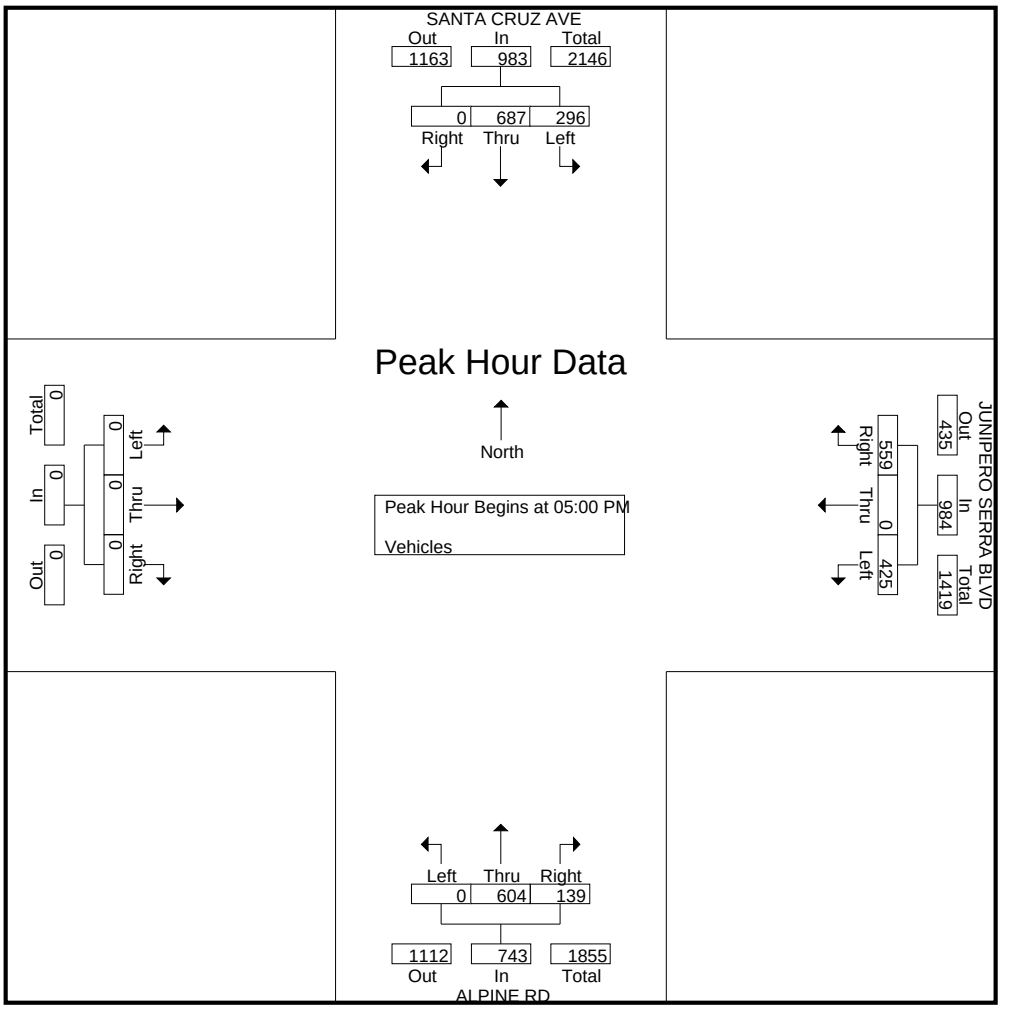

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File Name : 37AM FINAL
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Groups Printed- Vehicles

	BAYFRONT EXPY Southbound					WILLOW RD Westbound					BAYFRONT EXPY Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	11	106	7	0	124	3	1	1	0	5	3	543	228	0	774	60	10	9	0	79	982
07:15 AM	15	149	4	0	168	6	2	2	0	10	4	605	209	0	818	88	11	12	2	113	1109
07:30 AM	16	172	9	0	197	6	11	0	0	17	10	557	188	0	755	104	21	18	1	144	1113
07:45 AM	29	197	18	0	244	6	6	3	0	15	8	468	187	1	664	105	34	16	0	155	1078
Total	71	624	38	0	733	21	20	6	0	47	25	2173	812	1	3011	357	76	55	3	491	4282
08:00 AM	27	186	16	0	229	10	4	4	0	18	14	571	200	0	785	104	50	22	1	177	1209
08:15 AM	41	157	17	0	215	5	4	3	0	12	9	513	223	0	745	94	39	30	1	164	1136
08:30 AM	47	123	19	0	189	7	21	2	0	30	15	428	155	0	598	121	42	25	3	191	1008
08:45 AM	26	166	25	0	217	8	13	1	0	22	9	481	200	0	690	83	50	35	0	168	1097
Total	141	632	77	0	850	30	42	10	0	82	47	1993	778	0	2818	402	181	112	5	700	4450
09:00 AM	26	120	43	0	189	7	8	8	0	23	8	456	188	0	652	74	48	39	0	161	1025
09:15 AM	9	98	26	0	133	5	8	3	0	16	2	387	159	0	548	99	50	35	1	185	882
09:30 AM	16	129	29	0	174	7	6	2	0	15	8	383	217	0	608	92	49	38	0	179	976
09:45 AM	13	114	24	0	151	8	7	1	0	16	4	359	179	0	542	71	50	26	3	150	859
Total	64	461	122	0	647	27	29	14	0	70	22	1585	743	0	2350	336	197	138	4	675	3742
Grand Total	276	1717	237	0	2230	78	91	30	0	199	94	5751	2333	1	8179	1095	454	305	12	1866	12474
Apprch %	12.4	77	10.6	0		39.2	45.7	15.1	0		1.1	70.3	28.5	0		58.7	24.3	16.3	0.6		
Total %	2.2	13.8	1.9	0	17.9	0.6	0.7	0.2	0	1.6	0.8	46.1	18.7	0	65.6	8.8	3.6	2.4	0.1	15	

	BAYFRONT EXPY Southbound				WILLOW RD Westbound				BAYFRONT EXPY Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	16	172	9	197	6	**11**	0	17	10	557	188	755	104	21	18	143	1112
07:45 AM	29	**197**	**18**	**244**	6	6	3	15	8	468	187	663	**105**	34	16	155	1077
08:00 AM	27	186	16	229	**10**	4	**4**	**18**	**14**	**571**	200	**785**	104	**50**	22	**176**	**1208**
08:15 AM	**41**	157	17	215	5	4	3	12	9	513	**223**	745	94	39	**30**	163	1135
Total Volume	113	712	60	885	27	25	10	62	41	2109	798	2948	407	144	86	637	4532
% App. Total	12.8	80.5	6.8		43.5	40.3	16.1		1.4	71.5	27.1		63.9	22.6	13.5		
PHF	.689	.904	.833	.907	.675	.568	.625	.861	.732	.923	.895	.939	.969	.720	.717	.905	.938

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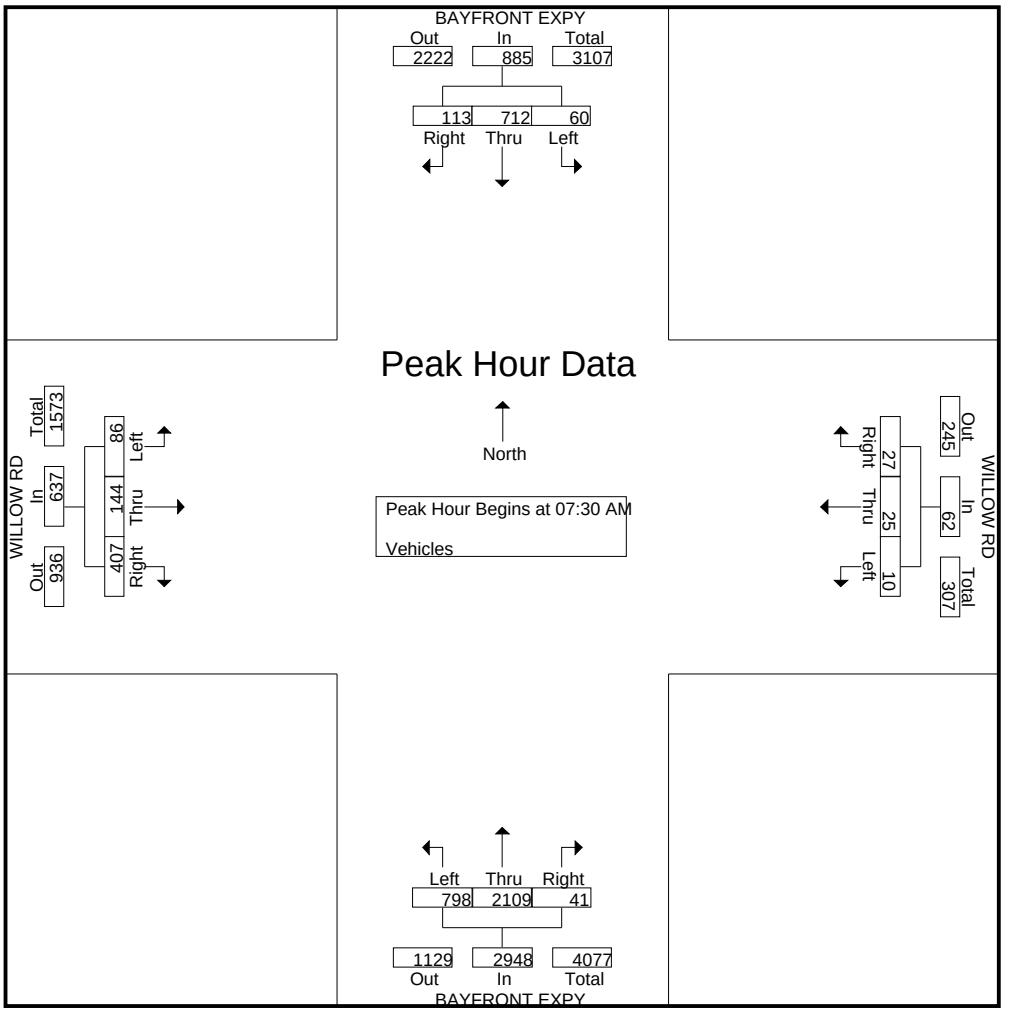

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Groups Printed- Vehicles

	BAYFRONT EXPY Southbound					WILLOW RD Westbound					BAYFRONT EXPY Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	25	471	2	1	499	7	14	10	0	31	2	167	73	0	242	345	3	12	0	360	1132
04:15 PM	31	491	4	0	526	10	20	9	0	39	2	188	79	0	269	345	3	14	5	367	1201
04:30 PM	47	475	3	0	525	17	28	9	0	54	3	181	88	0	272	319	9	14	1	343	1194
04:45 PM	26	477	7	1	511	20	23	12	0	55	1	213	119	0	333	346	7	11	2	366	1265
Total	129	1914	16	2	2061	54	85	40	0	179	8	749	359	0	1116	1355	22	51	8	1436	4792
05:00 PM	43	482	7	0	532	22	39	11	0	72	1	196	76	0	273	302	6	6	2	316	1193
05:15 PM	43	367	15	1	426	16	28	17	0	61	1	232	119	0	352	352	5	10	1	368	1207
05:30 PM	40	404	8	0	452	24	22	15	0	61	4	254	97	0	355	305	2	12	0	319	1187
05:45 PM	47	390	11	0	448	13	17	17	0	47	1	213	111	0	325	336	10	11	0	357	1177
Total	173	1643	41	1	1858	75	106	60	0	241	7	895	403	0	1305	1295	23	39	3	1360	4764
06:00 PM	45	326	14	0	385	17	20	13	0	50	0	207	87	0	294	294	7	14	0	315	1044
06:15 PM	23	329	6	0	358	22	27	6	0	55	0	177	112	0	289	320	3	7	1	331	1033
06:30 PM	31	437	4	0	472	3	13	6	0	22	1	168	67	0	236	279	3	5	0	287	1017
06:45 PM	21	287	6	0	314	8	16	16	0	40	1	162	95	0	258	263	7	11	0	281	893
Total	120	1379	30	0	1529	50	76	41	0	167	2	714	361	0	1077	1156	20	37	1	1214	3987
Grand Total	422	4936	87	3	5448	179	267	141	0	587	17	2358	1123	0	3498	3806	65	127	12	4010	13543
Apprch %	7.7	90.6	1.6	0.1		30.5	45.5	24	0		0.5	67.4	32.1	0		94.9	1.6	3.2	0.3		
Total %	3.1	36.4	0.6	0	40.2	1.3	2	1	0	4.3	0.1	17.4	8.3	0	25.8	28.1	0.5	0.9	0.1	29.6	

	BAYFRONT EXPY Southbound				WILLOW RD Westbound				BAYFRONT EXPY Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**47**	475	3	525	17	28	9	54	**3**	181	88	272	319	**9**	**14**	342	1193
04:45 PM	26	477	7	510	20	23	12	55	1	213	**119**	333	346	7	11	364	**1262**
05:00 PM	43	**482**	7	**532**	**22**	**39**	11	**72**	1	196	76	273	302	6	6	314	1191
05:15 PM	43	367	**15**	425	16	28	**17**	61	1	**232**	119	**352**	**352**	5	10	**367**	1205
Total Volume	159	1801	32	1992	75	118	49	242	6	822	402	1230	1319	27	41	1387	4851
% App. Total	8	90.4	1.6		31	48.8	20.2		0.5	66.8	32.7		95.1	1.9	3		
PHF	.846	.934	.533	.936	.852	.756	.721	.840	.500	.886	.845	.874	.937	.750	.732	.945	.961

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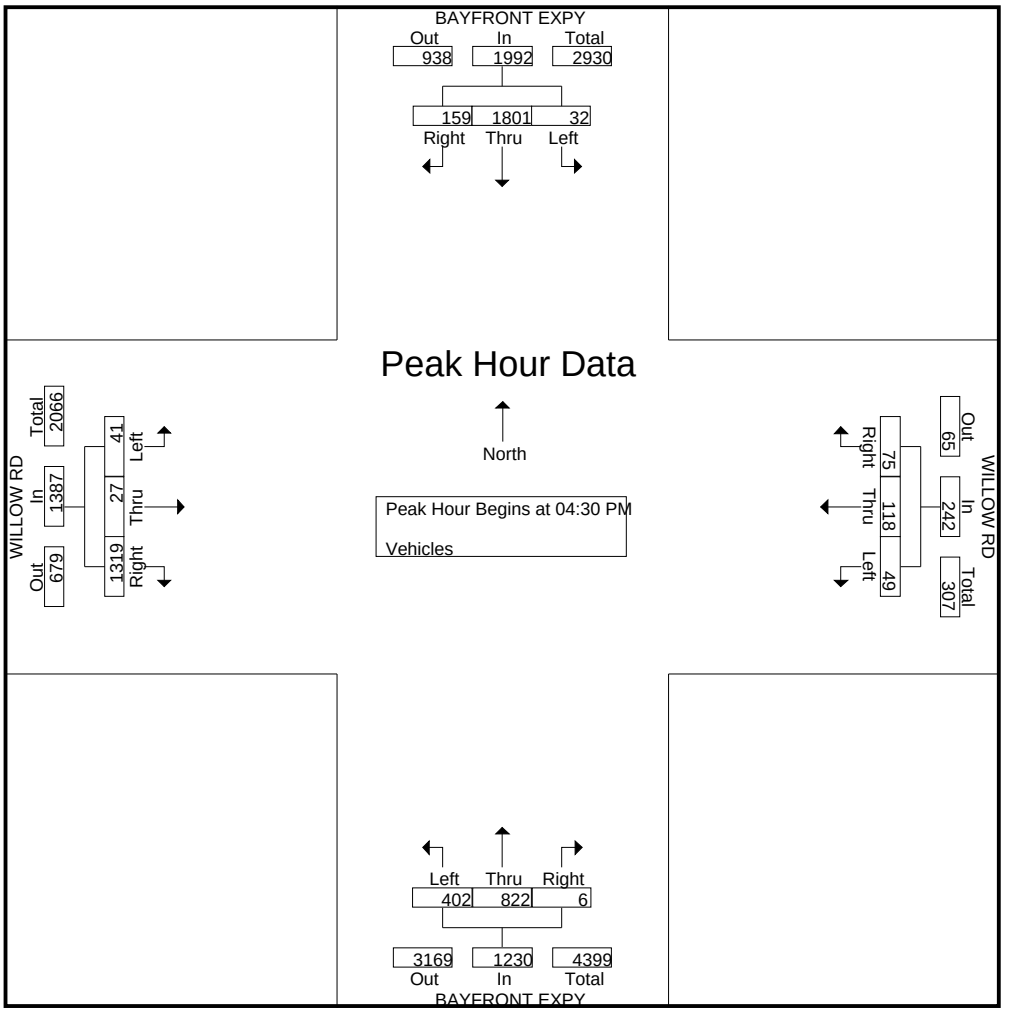

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 36AM FINAL
Site Code : 00000036
Start Date : 11/10/2022
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Groups Printed- Vehicles

	HAMILTON AVE Southbound					WILLOW RD Westbound					HAMILTON AVE Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	13	1	11	0	25	5	185	1	0	191	2	0	0	0	2	2	71	19	0	92	310
07:15 AM	21	0	15	0	36	8	168	2	0	178	1	1	0	0	2	1	87	18	0	106	322
07:30 AM	35	0	19	0	54	8	198	3	0	209	1	2	1	1	5	0	127	22	0	149	417
07:45 AM	28	0	16	0	44	6	156	2	2	166	2	1	2	0	5	2	139	28	0	169	384
Total	97	1	61	0	159	27	707	8	2	744	6	4	3	1	14	5	424	87	0	516	1433
08:00 AM	24	0	13	0	37	2	203	3	1	209	0	3	1	2	6	1	155	25	0	181	433
08:15 AM	20	0	19	0	39	8	187	4	1	200	1	0	1	2	4	0	143	29	0	172	415
08:30 AM	26	0	17	0	43	5	203	3	0	211	3	1	4	0	8	3	152	22	0	177	439
08:45 AM	14	0	16	0	30	6	208	3	1	218	4	1	3	0	8	2	139	30	0	171	427
Total	84	0	65	0	149	21	801	13	3	838	8	5	9	4	26	6	589	106	0	701	1714
09:00 AM	17	1	15	5	38	4	185	6	0	195	1	0	2	1	4	3	153	31	2	189	426
09:15 AM	15	1	11	4	31	3	188	4	0	195	4	4	1	0	9	3	164	33	1	201	436
09:30 AM	16	0	13	1	30	2	177	6	0	185	3	0	2	0	5	3	151	32	1	187	407
09:45 AM	20	1	17	3	41	6	182	4	0	192	0	0	3	0	3	3	132	15	1	151	387
Total	68	3	56	13	140	15	732	20	0	767	8	4	8	1	21	12	600	111	5	728	1656
Grand Total	249	4	182	13	448	63	2240	41	5	2349	22	13	20	6	61	23	1613	304	5	1945	4803
Apprch %	55.6	0.9	40.6	2.9		2.7	95.4	1.7	0.2		36.1	21.3	32.8	9.8		1.2	82.9	15.6	0.3		
Total %	5.2	0.1	3.8	0.3	9.3	1.3	46.6	0.9	0.1	48.9	0.5	0.3	0.4	0.1	1.3	0.5	33.6	6.3	0.1	40.5	

	HAMILTON AVE Southbound				WILLOW RD Westbound				HAMILTON AVE Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30 AM																	
08:30 AM	**26**	0	**17**	**43**	5	203	3	211	3	1	**4**	8	**3**	152	22	177	**439**
08:45 AM	14	0	16	30	**6**	**208**	3	**217**	**4**	1	3	8	2	139	30	171	426
09:00 AM	17	**1**	15	33	4	185	**6**	195	1	0	2	3	3	153	31	187	418
09:15 AM	15	1	11	27	3	188	4	195	4	**4**	1	**9**	3	**164**	**33**	**200**	431
Total Volume	72	2	59	133	18	784	16	818	12	6	10	28	11	608	116	735	1714
% App. Total	54.1	1.5	44.4		2.2	95.8	2		42.9	21.4	35.7		1.5	82.7	15.8		
PHF	.692	.500	.868	.773	.750	.942	.667	.942	.750	.375	.625	.778	.917	.927	.879	.919	.976

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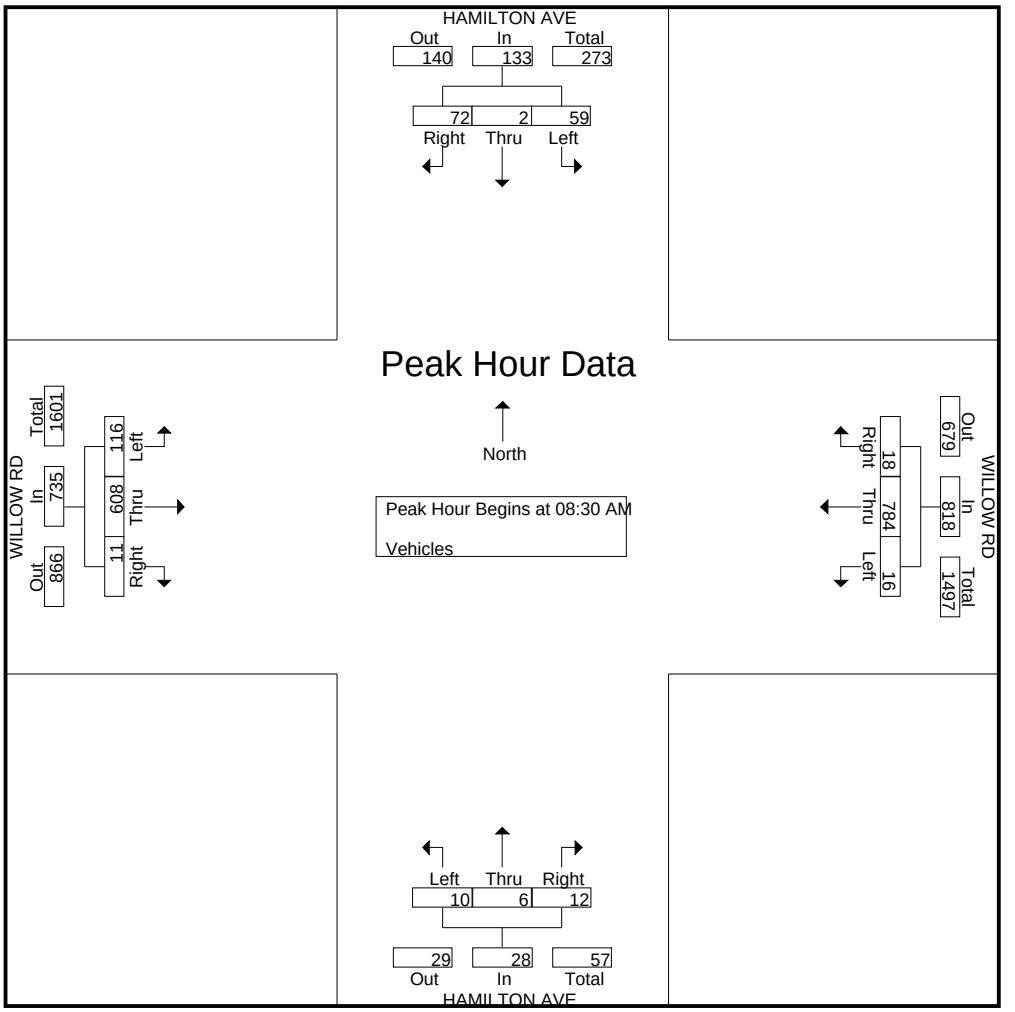

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6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 36PM FINAL
Site Code : 00000036
Start Date : 11/10/2022
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Groups Printed- Vehicles

	HAMILTON AVE Southbound					WILLOW RD Westbound					HAMILTON AVE Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	10	0	14	2	26	10	110	3	2	125	4	0	2	0	6	2	363	31	0	396	553
04:15 PM	5	1	19	0	25	20	106	2	2	130	2	0	2	0	4	1	319	28	0	348	507
04:30 PM	17	0	16	0	33	13	158	6	1	178	8	0	1	1	10	4	344	29	0	377	598
04:45 PM	14	0	18	0	32	10	177	6	3	196	1	0	1	0	2	3	328	24	0	355	585
Total	46	1	67	2	116	53	551	17	8	629	15	0	6	1	22	10	1354	112	0	1476	2243
05:00 PM	17	2	18	1	38	14	156	6	1	177	3	1	3	0	7	4	340	25	2	371	593
05:15 PM	14	0	12	1	27	11	181	4	0	196	8	2	4	0	14	2	309	25	1	337	574
05:30 PM	12	0	14	0	26	19	195	8	0	222	8	0	7	0	15	2	330	21	0	353	616
05:45 PM	13	0	14	1	28	16	174	3	1	194	4	4	1	0	9	0	304	29	0	333	564
Total	56	2	58	3	119	60	706	21	2	789	23	7	15	0	45	8	1283	100	3	1394	2347
06:00 PM	13	1	12	0	26	12	171	3	1	187	1	1	0	0	2	2	316	24	0	342	557
06:15 PM	20	0	15	0	35	11	141	4	0	156	1	0	0	0	1	2	310	33	0	345	537
06:30 PM	12	0	16	0	28	13	106	4	0	123	2	0	1	0	3	2	302	27	0	331	485
06:45 PM	14	1	15	0	30	17	118	5	2	142	5	2	0	0	7	0	243	20	0	263	442
Total	59	2	58	0	119	53	536	16	3	608	9	3	1	0	13	6	1171	104	0	1281	2021
Grand Total	161	5	183	5	354	166	1793	54	13	2026	47	10	22	1	80	24	3808	316	3	4151	6611
Apprch %	45.5	1.4	51.7	1.4		8.2	88.5	2.7	0.6		58.8	12.5	27.5	1.2		0.6	91.7	7.6	0.1		
Total %	2.4	0.1	2.8	0.1	5.4	2.5	27.1	0.8	0.2	30.6	0.7	0.2	0.3	0	1.2	0.4	57.6	4.8	0	62.8	

	HAMILTON AVE Southbound				WILLOW RD Westbound				HAMILTON AVE Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	14	0	**18**	32	10	177	6	193	1	0	1	2	3	328	24	355	582
05:00 PM	**17**	**2**	18	**37**	14	156	6	176	3	1	3	7	**4**	**340**	**25**	**369**	589
05:15 PM	14	0	12	26	11	181	4	196	**8**	**2**	4	14	2	309	25	336	572
05:30 PM	12	0	14	26	**19**	**195**	**8**	**222**	8	0	**7**	**15**	2	330	21	353	**616**
Total Volume	57	2	62	121	54	709	24	787	20	3	15	38	11	1307	95	1413	2359
% App. Total	47.1	1.7	51.2		6.9	90.1	3		52.6	7.9	39.5		0.8	92.5	6.7		
PHF	.838	.250	.861	.818	.711	.909	.750	.886	.625	.375	.536	.633	.688	.961	.950	.957	.957

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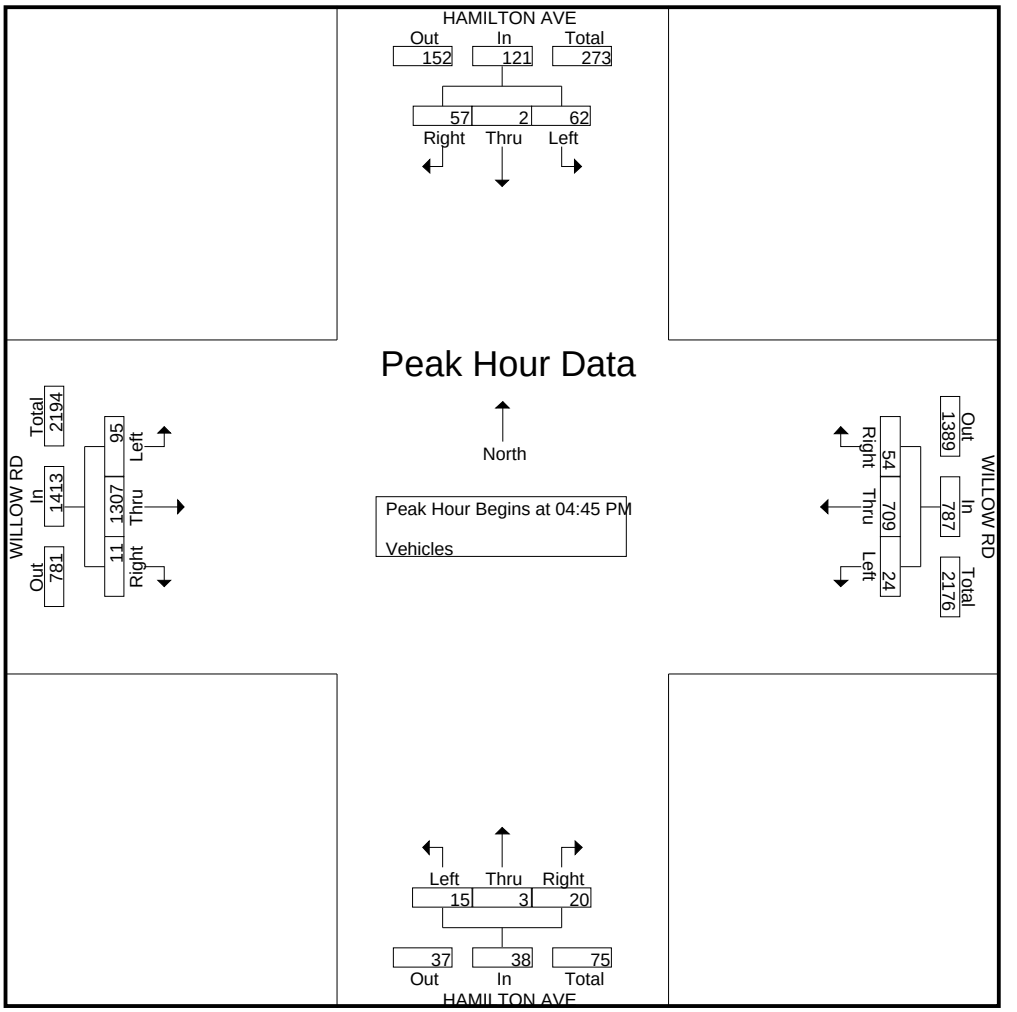

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
San Jose, CA 95119
tdsbay@cs.com

File Name : 35AM FINAL
Site Code : 00000035
Start Date : 11/10/2022
Page No : 1

Groups Printed- Vehicles

	IVY DR Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	24	0	0	0	24	2	222	0	0	224	0	0	0	0	0	0	66	10	0	76	324
07:15 AM	41	0	3	0	44	3	231	0	0	234	0	0	0	0	0	0	111	7	0	118	396
07:30 AM	54	0	1	0	55	1	247	0	0	248	0	0	0	0	0	0	99	14	0	113	416
07:45 AM	39	0	2	1	42	7	232	0	0	239	0	0	0	0	0	0	157	28	1	186	467
Total	158	0	6	1	165	13	932	0	0	945	0	0	0	0	0	0	433	59	1	493	1603
08:00 AM	42	0	4	0	46	1	216	0	0	217	0	0	0	0	0	0	135	24	1	160	423
08:15 AM	47	0	4	0	51	1	206	0	0	207	0	0	0	0	0	0	125	23	0	148	406
08:30 AM	37	0	2	1	40	3	192	0	1	196	0	0	0	0	0	0	147	14	3	164	400
08:45 AM	26	0	4	0	30	6	230	0	0	236	0	0	0	0	0	0	156	11	1	168	434
Total	152	0	14	1	167	11	844	0	1	856	0	0	0	0	0	0	563	72	5	640	1663
09:00 AM	14	0	4	1	19	2	248	0	2	252	0	0	0	0	0	0	169	13	0	182	453
09:15 AM	23	0	3	0	26	2	203	0	4	209	0	0	0	0	0	0	189	6	2	197	432
09:30 AM	20	0	5	1	26	4	238	0	2	244	0	0	0	0	0	0	160	4	1	165	435
09:45 AM	13	0	1	1	15	2	205	0	1	208	0	0	0	0	0	0	151	11	0	162	385
Total	70	0	13	3	86	10	894	0	9	913	0	0	0	0	0	0	669	34	3	706	1705
Grand Total	380	0	33	5	418	34	2670	0	10	2714	0	0	0	0	0	0	1665	165	9	1839	4971
Apprch %	90.9	0	7.9	1.2		1.3	98.4	0	0.4		0	0	0	0		0	90.5	9	0.5		
Total %	7.6	0	0.7	0.1	8.4	0.7	53.7	0	0.2	54.6	0	0	0	0	0	0	33.5	3.3	0.2	37	

	IVY DR Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	**26**	0	4	**30**	**6**	230	0	236	0	0	0	0	0	156	11	167	433
09:00 AM	14	0	4	18	2	**248**	0	**250**	0	0	0	0	0	169	**13**	182	**450**
09:15 AM	23	0	3	26	2	203	0	205	0	0	0	0	0	**189**	6	**195**	426
09:30 AM	20	0	**5**	25	4	238	0	242	0	0	0	0	0	160	4	164	431
Total Volume	83	0	16	99	14	919	0	933	0	0	0	0	0	674	34	708	1740
% App. Total	83.8	0	16.2		1.5	98.5	0		0	0	0		0	95.2	4.8		
PHF	.798	.000	.800	.825	.583	.926	.000	.933	.000	.000	.000	.000	.000	.892	.654	.908	.967

TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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File Name : 35AM FINAL
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Start Date : 11/10/2022
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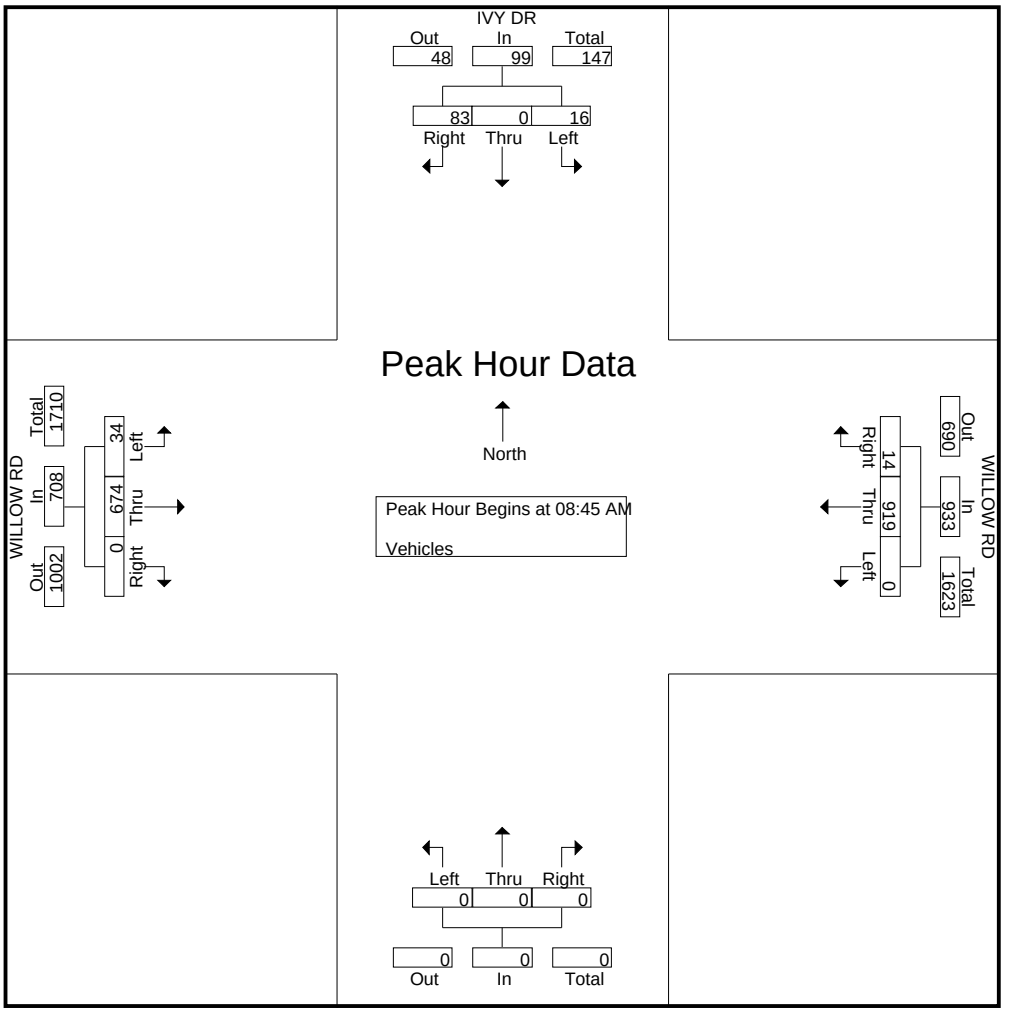

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6280 San Ignacio Ave Suite C
San Jose, CA 95119
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File Name : 35PM FINAL
Site Code : 00000035
Start Date : 11/10/2022
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Groups Printed- Vehicles

	IVY DR Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	29	0	3	0	32	9	124	0	0	133	0	0	0	0	0	0	365	25	0	390	555
04:15 PM	17	0	8	2	27	3	140	0	0	143	0	0	0	0	0	0	356	16	2	374	544
04:30 PM	24	0	5	0	29	6	193	0	0	199	0	0	0	0	0	0	331	15	0	346	574
04:45 PM	17	0	1	0	18	3	187	0	0	190	0	0	0	0	0	0	324	23	1	348	556
Total	87	0	17	2	106	21	644	0	0	665	0	0	0	0	0	0	1376	79	3	1458	2229
05:00 PM	21	0	1	0	22	9	192	0	2	203	0	0	0	0	0	0	358	20	0	378	603
05:15 PM	23	0	3	0	26	2	209	0	0	211	0	0	0	0	0	0	341	24	0	365	602
05:30 PM	18	0	0	0	18	4	213	0	1	218	0	0	0	0	0	0	358	20	0	378	614
05:45 PM	21	0	2	1	24	7	191	0	2	200	0	0	0	0	0	0	306	20	0	326	550
Total	83	0	6	1	90	22	805	0	5	832	0	0	0	0	0	0	1363	84	0	1447	2369
06:00 PM	16	0	3	1	20	3	194	0	1	198	0	0	0	0	0	0	328	15	0	343	561
06:15 PM	14	0	1	2	17	3	171	0	0	174	0	0	0	0	0	0	302	18	0	320	511
06:30 PM	17	0	1	1	19	1	143	1	0	145	0	0	0	0	0	0	284	21	0	305	469
06:45 PM	20	0	3	0	23	3	128	0	0	131	0	0	0	0	0	0	241	14	0	255	409
Total	67	0	8	4	79	10	636	1	1	648	0	0	0	0	0	0	1155	68	0	1223	1950
Grand Total	237	0	31	7	275	53	2085	1	6	2145	0	0	0	0	0	0	3894	231	3	4128	6548
Apprch %	86.2	0	11.3	2.5		2.5	97.2	0	0.3		0	0	0	0		0	94.3	5.6	0.1		
Total %	3.6	0	0.5	0.1	4.2	0.8	31.8	0	0.1	32.8	0	0	0	0	0	0	59.5	3.5	0	63	

	IVY DR Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	17	0	1	18	3	187	0	190	0	0	0	0	0	324	23	347	555
05:00 PM	21	0	1	22	**9**	192	0	201	0	0	0	0	0	**358**	20	**378**	601
05:15 PM	**23**	0	**3**	**26**	2	209	0	211	0	0	0	0	0	341	**24**	365	602
05:30 PM	18	0	0	18	4	**213**	0	**217**	0	0	0	0	0	358	20	378	**613**
Total Volume	79	0	5	84	18	801	0	819	0	0	0	0	0	1381	87	1468	2371
% App. Total	94	0	6		2.2	97.8	0		0	0	0		0	94.1	5.9		
PHF	.859	.000	.417	.808	.500	.940	.000	.944	.000	.000	.000	.000	.000	.964	.906	.971	.967

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File Name : 35PM FINAL
Site Code : 00000035
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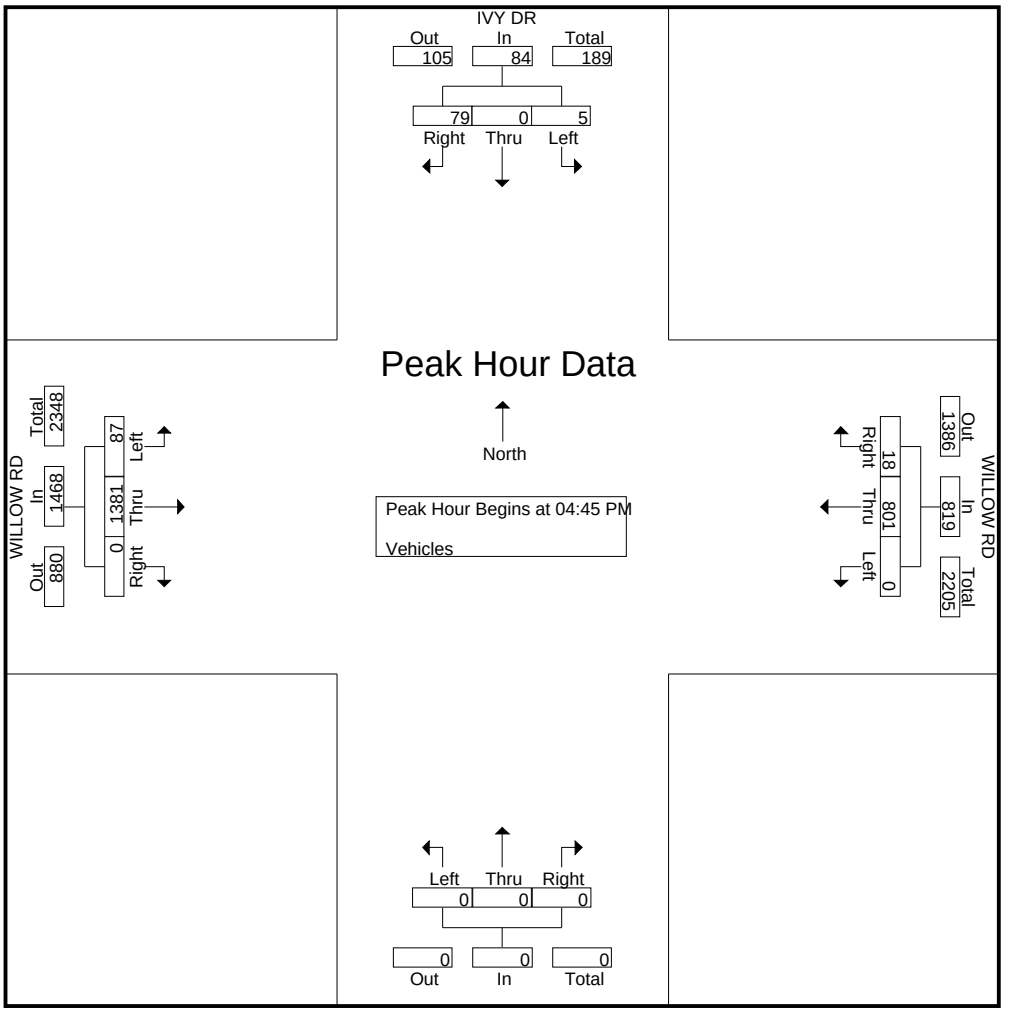
Page No : 2



TRAFFIC DATA SERVICE

6280 San Ignacio Ave Suite C
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tdsbay@cs.com

File Name : 34AM FINAL
Site Code : 00000034
Start Date : 11/10/2022
Page No : 1

Groups Printed- Vehicles

	Southbound					WILLOW RD Westbound					O'BRIEN DR Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	241	3	0	244	11	0	26	0	37	38	91	0	0	129	410
07:15 AM	0	0	0	0	0	0	262	3	0	265	2	0	40	0	42	40	122	0	0	162	469
07:30 AM	0	0	0	0	0	0	295	2	0	297	11	0	58	0	69	39	133	0	0	172	538
07:45 AM	0	0	0	0	0	0	251	9	0	260	13	0	100	0	113	73	198	0	0	271	644
Total	0	0	0	0	0	0	1049	17	0	1066	37	0	224	0	261	190	544	0	0	734	2061
08:00 AM	0	0	0	0	0	0	259	8	0	267	11	0	87	1	99	79	187	2	0	268	634
08:15 AM	0	0	0	0	0	0	254	18	0	272	8	0	92	3	103	61	172	0	0	233	608
08:30 AM	0	0	0	0	0	0	247	13	0	260	17	0	52	5	74	66	174	0	0	240	574
08:45 AM	0	0	0	0	0	0	240	24	0	264	9	0	49	2	60	93	181	0	0	274	598
Total	0	0	0	0	0	0	1000	63	0	1063	45	0	280	11	336	299	714	2	0	1015	2414
09:00 AM	0	0	0	0	0	0	256	10	0	266	8	0	72	1	81	84	196	0	0	280	627
09:15 AM	0	0	0	0	0	0	227	5	0	232	10	0	46	0	56	81	196	0	0	277	565
09:30 AM	0	0	0	0	0	0	255	8	0	263	9	0	27	0	36	73	170	0	0	243	542
09:45 AM	0	0	0	0	0	0	204	11	0	215	11	0	29	1	41	59	151	0	0	210	466
Total	0	0	0	0	0	0	942	34	0	976	38	0	174	2	214	297	713	0	0	1010	2200
Grand Total	0	0	0	0	0	0	2991	114	0	3105	120	0	678	13	811	786	1971	2	0	2759	6675
Apprch %	0	0	0	0		0	96.3	3.7	0		14.8	0	83.6	1.6		28.5	71.4	0.1	0		
Total %	0	0	0	0	0	0	44.8	1.7	0	46.5	1.8	0	10.2	0.2	12.1	11.8	29.5	0	0	41.3	

	Southbound				WILLOW RD Westbound				O'BRIEN DR Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	251	9	260	13	0	**100**	**113**	73	**198**	0	**271**	**644**
08:00 AM	0	0	0	0	0	**259**	8	267	11	0	87	98	**79**	187	**2**	268	633
08:15 AM	0	0	0	0	0	254	**18**	**272**	8	0	92	100	61	172	0	233	605
08:30 AM	0	0	0	0	0	247	13	260	**17**	0	52	69	66	174	0	240	569
Total Volume	0	0	0	0	0	1011	48	1059	49	0	331	380	279	731	2	1012	2451
% App. Total	0	0	0		0	95.5	4.5		12.9	0	87.1		27.6	72.2	0.2		
PHF	.000	.000	.000	.000	.000	.976	.667	.973	.721	.000	.828	.841	.883	.923	.250	.934	.951

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File Name : 34AM FINAL
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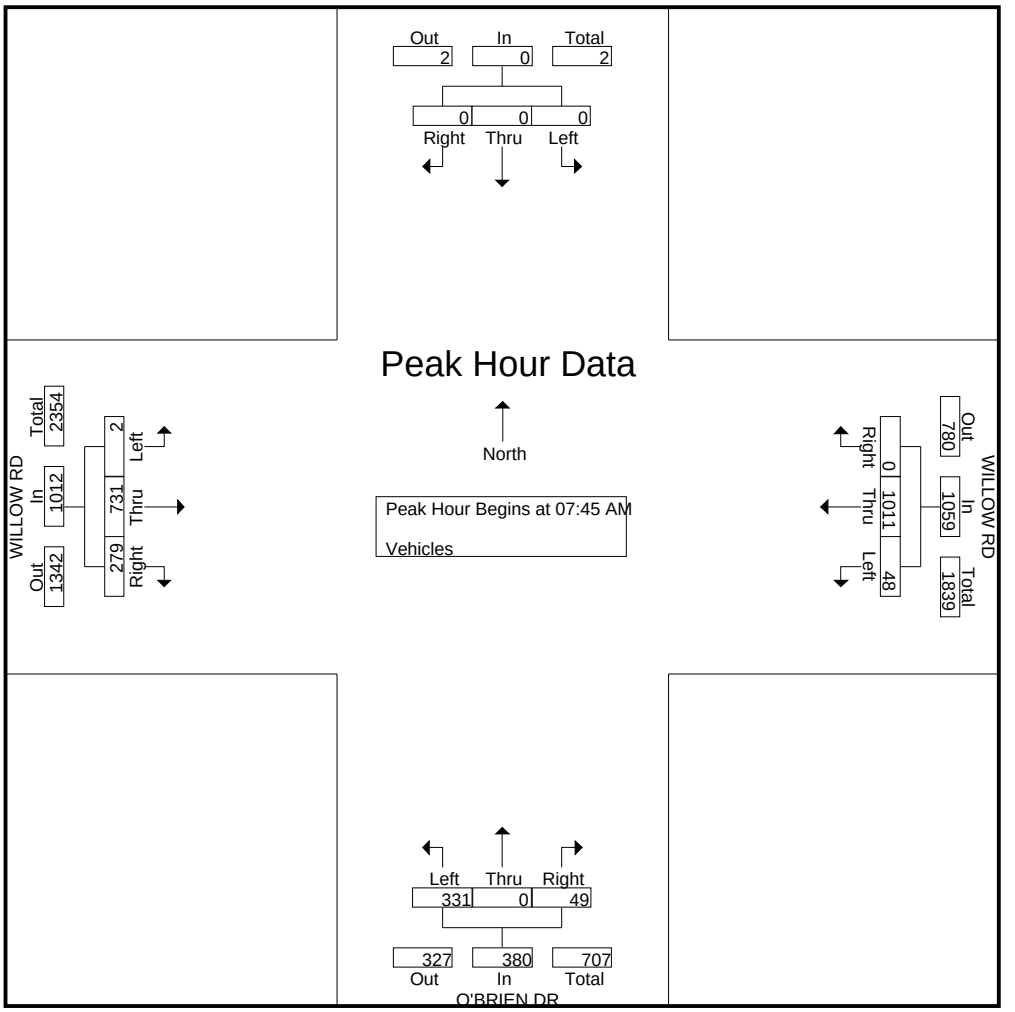

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File Name : 34PM FINAL
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Groups Printed- Vehicles

	Southbound					WILLOW RD Westbound					O'BRIEN DR Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	143	9	0	152	22	0	54	4	80	37	390	0	0	427	659
04:15 PM	0	0	0	0	0	0	151	8	0	159	15	0	52	3	70	40	358	0	0	398	627
04:30 PM	0	0	0	0	0	0	204	12	0	216	7	0	63	0	70	38	355	0	0	393	679
04:45 PM	0	0	0	0	0	0	203	6	0	209	3	0	49	1	53	47	370	1	0	418	680
Total	0	0	0	0	0	0	701	35	0	736	47	0	218	8	273	162	1473	1	0	1636	2645
05:00 PM	0	0	0	0	0	0	211	10	0	221	5	0	74	3	82	58	336	1	0	395	698
05:15 PM	0	0	0	0	0	0	236	4	0	240	4	0	65	0	69	43	351	0	0	394	703
05:30 PM	0	0	0	0	0	0	223	8	0	231	5	0	60	3	68	51	350	0	0	401	700
05:45 PM	0	0	0	0	0	0	207	14	0	221	2	0	49	1	52	70	300	0	0	370	643
Total	0	0	0	0	0	0	877	36	0	913	16	0	248	7	271	222	1337	1	0	1560	2744
06:00 PM	0	0	0	0	0	0	211	6	0	217	16	0	39	0	55	34	351	0	0	385	657
06:15 PM	0	0	0	0	0	0	182	6	0	188	10	0	47	0	57	39	317	0	0	356	601
06:30 PM	0	0	0	0	0	0	156	3	0	159	6	0	35	0	41	33	339	0	0	372	572
06:45 PM	0	0	0	0	0	0	150	5	0	155	7	0	29	0	36	25	270	1	0	296	487
Total	0	0	0	0	0	0	699	20	0	719	39	0	150	0	189	131	1277	1	0	1409	2317
Grand Total	0	0	0	0	0	0	2277	91	0	2368	102	0	616	15	733	515	4087	3	0	4605	7706
Apprch %	0	0	0	0		0	96.2	3.8	0		13.9	0	84	2		11.2	88.8	0.1	0		
Total %	0	0	0	0	0	0	29.5	1.2	0	30.7	1.3	0	8	0.2	9.5	6.7	53	0	0	59.8	

	Southbound				WILLOW RD Westbound				O'BRIEN DR Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	203	6	209	3	0	49	52	47	**370**	**1**	**418**	679
05:00 PM	0	0	0	0	0	211	**10**	221	**5**	0	**74**	**79**	**58**	336	1	395	695
05:15 PM	0	0	0	0	0	**236**	4	**240**	4	0	65	69	43	351	0	394	**703**
05:30 PM	0	0	0	0	0	223	8	231	5	0	60	65	51	350	0	401	697
Total Volume	0	0	0	0	0	873	28	901	17	0	248	265	199	1407	2	1608	2774
% App. Total	0	0	0		0	96.9	3.1		6.4	0	93.6		12.4	87.5	0.1		
PHF	.000	.000	.000	.000	.000	.925	.700	.939	.850	.000	.838	.839	.858	.951	.500	.962	.986

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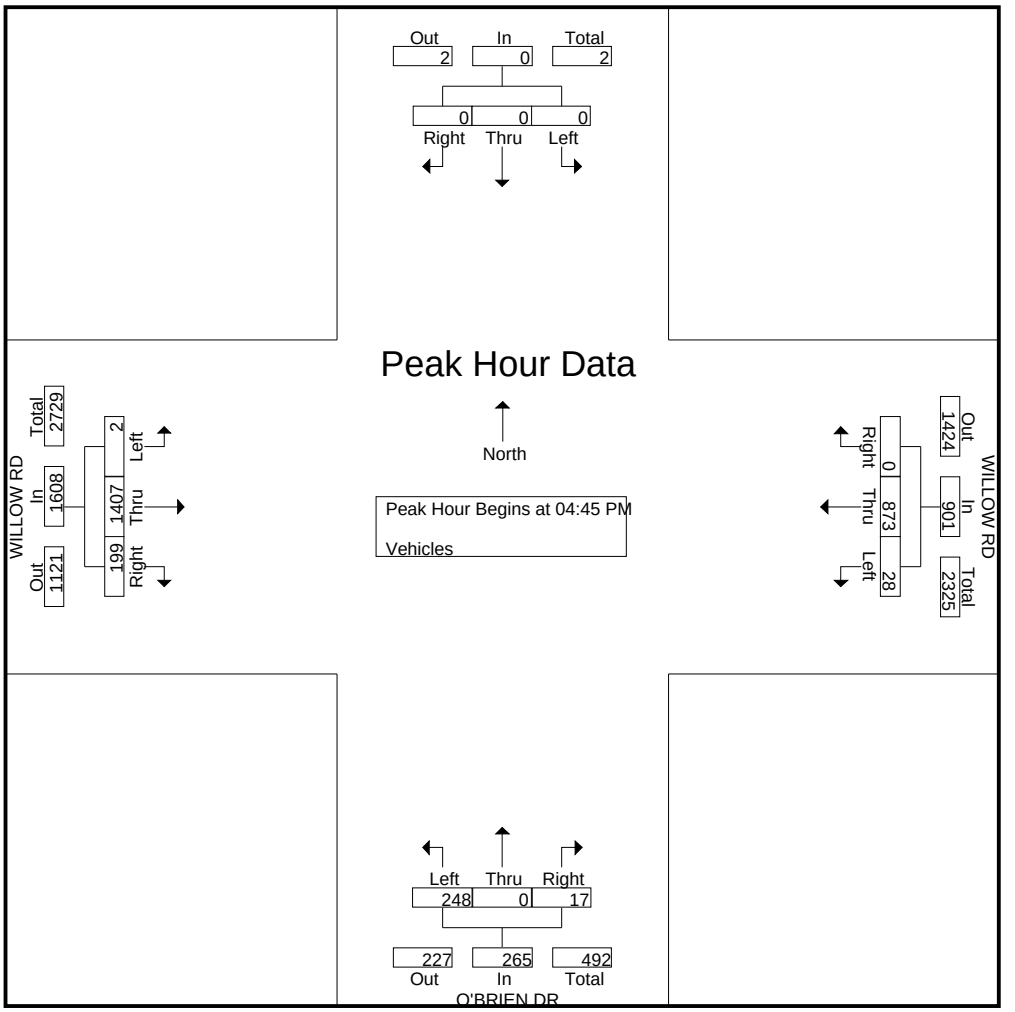

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File Name : 33AM FINAL
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Groups Printed- Vehicles

	NEWBRIDGE ST Southbound					WILLOW RD Westbound					NEWBRIDGE ST Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	67	17	3	0	87	0	196	1	0	197	2	12	38	0	52	3	55	23	0	81	417
07:15 AM	84	14	3	2	103	1	296	6	6	309	8	14	71	0	93	23	150	46	4	223	728
07:30 AM	120	31	3	0	154	6	294	9	5	314	9	21	104	6	140	24	158	38	2	222	830
07:45 AM	101	27	5	1	134	2	375	15	13	405	6	12	92	0	110	74	238	42	3	357	1006
Total	372	89	14	3	478	9	1161	31	24	1225	25	59	305	6	395	124	601	149	9	883	2981
08:00 AM	87	30	8	2	127	4	318	15	5	342	4	18	89	2	113	50	243	51	0	344	926
08:15 AM	82	33	5	1	121	6	314	22	8	350	9	33	93	0	135	39	202	39	0	280	886
08:30 AM	73	36	4	2	115	8	296	14	4	322	14	29	70	1	114	54	225	43	0	322	873
08:45 AM	57	30	4	1	92	1	274	14	6	295	13	25	71	1	110	59	268	51	4	382	879
Total	299	129	21	6	455	19	1202	65	23	1309	40	105	323	4	472	202	938	184	4	1328	3564
09:00 AM	51	20	6	1	78	2	293	18	9	322	14	11	46	1	72	44	233	33	0	310	782
09:15 AM	40	10	3	0	53	3	274	9	2	288	10	12	31	0	53	34	275	25	0	334	728
09:30 AM	51	14	6	0	71	1	232	19	3	255	12	12	47	0	71	37	220	36	2	295	692
09:45 AM	52	7	2	0	61	3	246	11	4	264	6	10	40	1	57	39	190	32	1	262	644
Total	194	51	17	1	263	9	1045	57	18	1129	42	45	164	2	253	154	918	126	3	1201	2846
Grand Total	865	269	52	10	1196	37	3408	153	65	3663	107	209	792	12	1120	480	2457	459	16	3412	9391
Apprch %	72.3	22.5	4.3	0.8		1	93	4.2	1.8		9.6	18.7	70.7	1.1		14.1	72	13.5	0.5		
Total %	9.2	2.9	0.6	0.1	12.7	0.4	36.3	1.6	0.7	39	1.1	2.2	8.4	0.1	11.9	5.1	26.2	4.9	0.2	36.3	

	NEWBRIDGE ST Southbound				WILLOW RD Westbound				NEWBRIDGE ST Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**101**	27	5	**133**	2	**375**	15	**392**	6	12	92	110	**74**	238	42	**354**	**989**
08:00 AM	87	30	**8**	125	4	318	15	337	4	18	89	111	50	**243**	**51**	344	917
08:15 AM	82	33	5	120	6	314	**22**	342	9	**33**	**93**	**135**	39	202	39	280	877
08:30 AM	73	**36**	4	113	**8**	296	14	318	**14**	29	70	113	54	225	43	322	866
Total Volume	343	126	22	491	20	1303	66	1389	33	92	344	469	217	908	175	1300	3649
% App. Total	69.9	25.7	4.5		1.4	93.8	4.8		7	19.6	73.3		16.7	69.8	13.5		
PHF	.849	.875	.688	.923	.625	.869	.750	.886	.589	.697	.925	.869	.733	.934	.858	.918	.922

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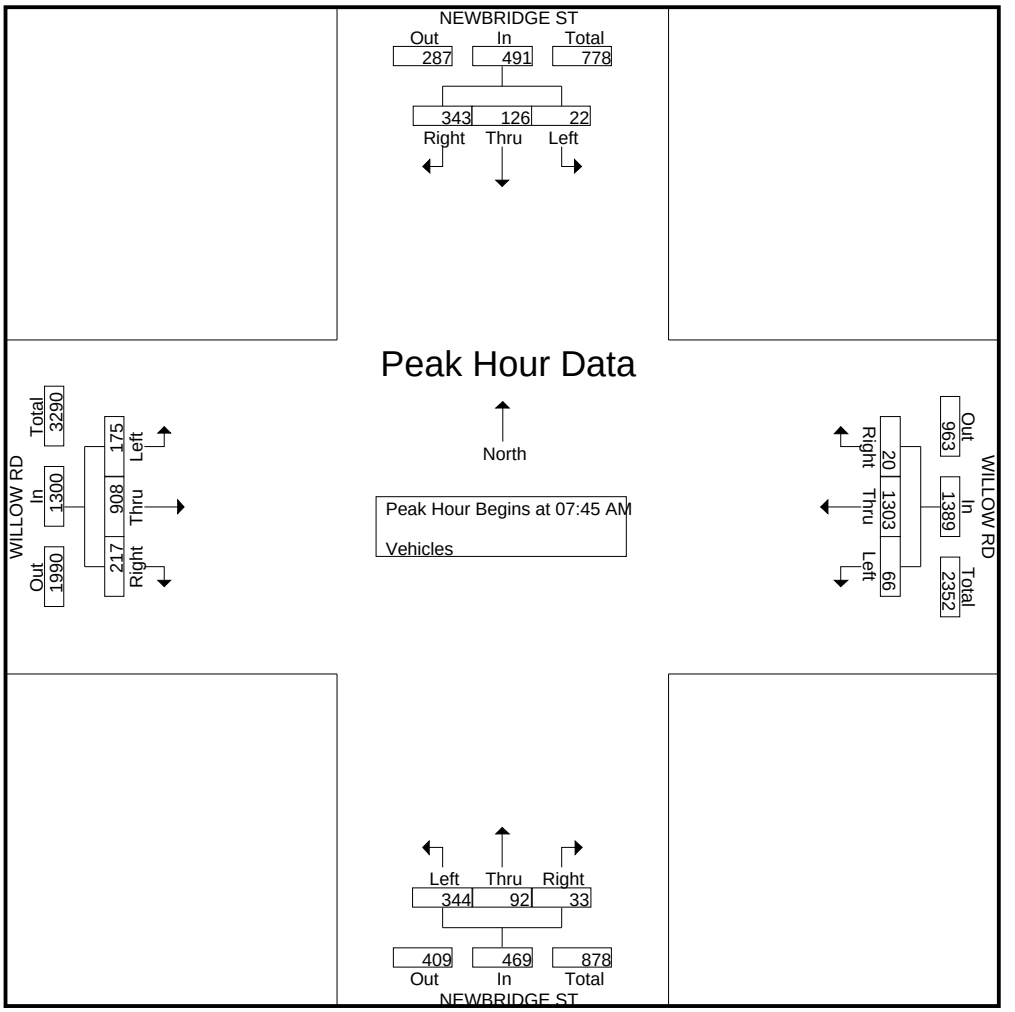

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Groups Printed- Vehicles

	NEWBRIDGE ST Southbound					WILLOW RD Westbound					NEWBRIDGE ST Northbound					WILLOW RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	43	37	9	3	92	8	161	13	4	186	18	28	38	1	85	71	377	78	5	531	894
04:15 PM	62	23	7	1	93	4	169	18	3	194	15	41	57	1	114	89	318	81	5	493	894
04:30 PM	63	32	13	4	112	6	201	25	9	241	13	26	31	5	75	83	343	80	3	509	937
04:45 PM	65	29	6	4	104	4	237	22	9	272	12	27	57	1	97	123	346	86	1	556	1029
Total	233	121	35	12	401	22	768	78	25	893	58	122	183	8	371	366	1384	325	14	2089	3754
05:00 PM	62	25	9	3	99	5	257	25	0	287	18	28	37	0	83	101	334	66	4	505	974
05:15 PM	51	40	16	2	109	4	258	31	2	295	11	53	62	0	126	84	334	83	3	504	1034
05:30 PM	78	49	13	5	145	4	256	15	0	275	14	51	45	0	110	108	370	87	1	566	1096
05:45 PM	55	42	7	7	111	6	217	26	1	250	14	35	37	0	86	98	359	96	3	556	1003
Total	246	156	45	17	464	19	988	97	3	1107	57	167	181	0	405	391	1397	332	11	2131	4107
06:00 PM	52	25	4	6	87	5	222	18	13	258	13	35	35	0	83	95	343	71	1	510	938
06:15 PM	44	26	8	3	81	6	217	21	1	245	15	27	29	0	71	69	321	55	4	449	846
06:30 PM	52	18	4	2	76	2	167	22	1	192	7	32	37	0	76	74	334	64	0	472	816
06:45 PM	46	27	1	1	75	6	147	12	5	170	9	24	23	0	56	57	272	72	1	402	703
Total	194	96	17	12	319	19	753	73	20	865	44	118	124	0	286	295	1270	262	6	1833	3303
Grand Total	673	373	97	41	1184	60	2509	248	48	2865	159	407	488	8	1062	1052	4051	919	31	6053	11164
Apprch %	56.8	31.5	8.2	3.5		2.1	87.6	8.7	1.7		15	38.3	46	0.8		17.4	66.9	15.2	0.5		
Total %	6	3.3	0.9	0.4	10.6	0.5	22.5	2.2	0.4	25.7	1.4	3.6	4.4	0.1	9.5	9.4	36.3	8.2	0.3	54.2	

	NEWBRIDGE ST Southbound				WILLOW RD Westbound				NEWBRIDGE ST Northbound				WILLOW RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	65	29	6	100	4	237	22	263	12	27	57	96	**123**	346	86	555	1014
05:00 PM	62	25	9	96	**5**	257	25	287	**18**	28	37	83	101	334	66	501	967
05:15 PM	51	40	**16**	107	4	**258**	**31**	**293**	11	**53**	**62**	**126**	84	334	83	501	1027
05:30 PM	**78**	**49**	13	**140**	4	256	15	275	14	51	45	110	108	**370**	**87**	**565**	**1090**
Total Volume	256	143	44	443	17	1008	93	1118	55	159	201	415	416	1384	322	2122	4098
% App. Total	57.8	32.3	9.9		1.5	90.2	8.3		13.3	38.3	48.4		19.6	65.2	15.2		
PHF	.821	.730	.688	.791	.850	.977	.750	.954	.764	.750	.810	.823	.846	.935	.925	.939	.940

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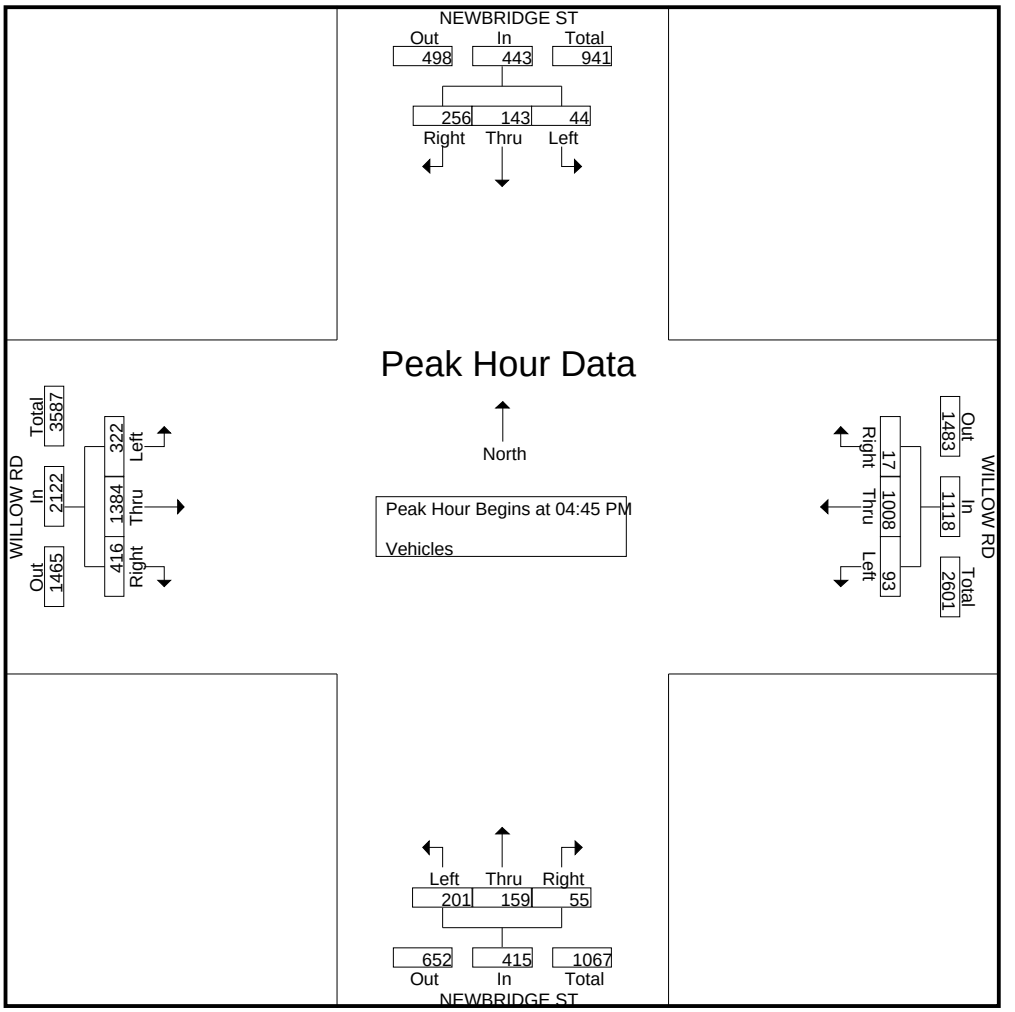


National Data & Surveying Services Intersection Turning Movement Count

Location: Bayfront Expy/SR 84 & University Ave/SR 109
City: Menlo Park
Control: Signalized

Project ID: 23-080034-002
Date: 2/16/2023

Data - Totals

NS/EW Streets:	Bayfront Expy/SR 84				Bayfront Expy/SR 84				University Ave/SR 109				University Ave/SR 109				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	2	3	0	0	0	0	0	0	2	0	3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	168	11	0	239	727	0	0	0	0	0	0	17	0	75	0	1237
7:15 AM	0	200	10	0	269	857	0	0	0	0	0	0	25	0	89	0	1450
7:30 AM	0	251	16	0	239	947	0	0	0	0	0	0	46	0	97	0	1596
7:45 AM	0	294	26	0	271	782	0	0	0	0	0	0	50	0	107	0	1530
8:00 AM	0	233	29	0	247	693	0	0	0	0	0	0	27	0	95	0	1324
8:15 AM	0	222	20	0	245	776	0	0	0	0	0	0	39	0	115	0	1417
8:30 AM	0	229	20	0	212	699	0	0	0	0	0	0	59	0	103	0	1322
8:45 AM	0	168	25	0	259	730	0	0	0	0	0	0	129	0	103	0	1414
9:00 AM	0	182	11	0	250	687	0	0	0	0	0	0	133	0	116	0	1379
9:15 AM	0	154	11	0	232	645	0	0	0	0	0	0	117	0	91	0	1250
9:30 AM	0	200	16	0	200	636	0	0	0	0	0	0	43	0	75	0	1170
9:45 AM	0	199	11	0	157	573	0	0	0	0	0	0	23	0	74	0	1037
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2500	206	0	2820	8752	0	0	0	0	0	0	708	0	1140	0	16126
APPROACH %'s :	0.00%	92.39%	7.61%	0.00%	24.37%	75.63%	0.00%	0.00%					38.31%	0.00%	61.69%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	978	81	0	1026	3279	0	0	0	0	0	0	148	0	388	0	5900
PEAK HR FACTOR :	0.000	0.832	0.698	0.000	0.946	0.866	0.000	0.000	0.000	0.000	0.000	0.000	0.740	0.000	0.907	0.000	0.924
		0.827				0.907								0.854			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	2	3	0	0	0	0	0	0	2	0	3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	893	18	0	51	266	0	0	0	0	0	0	17	0	251	0	1496
4:15 PM	0	763	25	0	86	273	0	0	0	0	0	0	10	0	354	0	1511
4:30 PM	0	872	15	0	61	243	0	0	0	0	0	0	22	0	279	0	1492
4:45 PM	0	793	17	0	88	251	0	0	0	0	0	0	23	0	329	0	1501
5:00 PM	0	901	17	0	62	249	0	0	0	0	0	0	19	0	263	0	1511
5:15 PM	0	789	24	0	104	269	0	0	0	0	0	0	22	0	367	0	1575
5:30 PM	0	893	28	0	79	304	0	0	0	0	0	0	24	0	277	0	1605
5:45 PM	0	786	26	0	88	294	0	0	0	0	0	0	18	0	386	0	1598
6:00 PM	0	733	25	0	81	234	0	0	0	0	0	0	13	0	218	0	1304
6:15 PM	0	546	27	0	72	263	0	0	0	0	0	0	23	0	292	0	1223
6:30 PM	0	568	21	0	55	246	0	0	0	0	0	0	11	0	173	0	1074
6:45 PM	0	522	20	0	64	243	0	0	0	0	0	0	13	0	194	0	1056
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	9059	263	0	891	3135	0	0	0	0	0	0	215	0	3383	0	16946
APPROACH %'s :	0.00%	97.18%	2.82%	0.00%	22.13%	77.87%	0.00%	0.00%					5.98%	0.00%	94.02%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	3369	95	0	333	1116	0	0	0	0	0	0	83	0	1293	0	6289
PEAK HR FACTOR :	0.000	0.935	0.848	0.000	0.800	0.918	0.000	0.000	0.000	0.000	0.000	0.000	0.865	0.000	0.837	0.000	0.980
		0.940				0.946								0.851			

National Data & Surveying Services Intersection Turning Movement Count

Location: Bayfront Expy/SR 84 & University Ave/SR 109
City: Menlo Park
Control: Signalized

Project ID: 23-080034-002
Date: 2/16/2023

Data - Bikes

NS/EW Streets:	Bayfront Expy/SR 84				Bayfront Expy/SR 84				University Ave/SR 109				University Ave/SR 109				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	2	3	0	0	0	0	0	0	2	0	3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	1	3	0	0	0	0	0	0	0	0	0	1	0	0	0	5
7:45 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	3
8:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	2	0	5
8:15 AM	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	3
8:30 AM	0	0	0	0	1	2	0	0	0	0	0	0	0	0	3	0	6
8:45 AM	0	0	0	0	2	2	0	0	0	0	0	0	1	0	2	0	7
9:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
9:15 AM	0	2	3	0	1	1	0	0	0	0	0	0	0	0	2	0	9
9:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
9:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	9	0	9	12	0	0	0	0	0	0	4	0	10	0	48
APPROACH %'s :	0.00%	30.77%	69.23%	0.00%	42.86%	57.14%	0.00%	0.00%					28.57%	0.00%	71.43%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	2	3	0	3	3	0	0	0	0	0	0	1	0	3	0	15
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.375	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.375	0.000	0.750
		0.313				0.750								0.500			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	1	0	2	3	0	0	0	0	0	0	2	0	3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	1	0	5
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	3
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	3	0	1	0	6
5:00 PM	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	3
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	3
5:45 PM	0	1	0	0	5	0	0	0	0	0	0	0	0	0	1	0	7
6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	7	6	0	8	5	0	0	0	0	0	0	3	0	7	0	36
APPROACH %'s :	0.00%	53.85%	46.15%	0.00%	61.54%	38.46%	0.00%	0.00%					30.00%	0.00%	70.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	4	1	0	7	1	0	0	0	0	0	0	0	0	3	0	16
PEAK HR FACTOR :	0.000	1.000	0.250	0.000	0.350	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.571
		0.625				0.400								0.750			

National Data & Surveying Services Intersection Turning Movement Count

Location: Bayfront Expy/SR 84 & University Ave/SR 109 **Project ID:** 23-080034-002
City: Menlo Park **Date:** 2/16/2023

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Bayfront Expy/SR 84		Bayfront Expy/SR 84		University Ave/SR 109		University Ave/SR 109		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	1	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	1	0	0	2
APPROACH %'s :					50.00%	50.00%			
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	1
5:15 PM	1	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	1	0	0	0	1
6:00 PM	0	0	0	0	0	1	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	1	1	0	0	2
6:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	1	0	0	2	2	0	0	6
APPROACH %'s :	50.00%	50.00%			50.00%	50.00%			
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	1	1	0	0	1	0	0	0	3
PEAK HR FACTOR :	0.250	0.250			0.250				0.750
	0.500				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Bayfront Expy/SR 84 & University Ave/SR 109

Peak Hour Turning Movement Count

ID: 23-080034-002
City: Menlo Park

Day: Thursday
Date: 2/16/2023

PEAK HOURS	COUNT PERIODS
AM: 07:15 AM - 08:15 AM	AM: 7:00 AM - 10:00 AM
NOON: NONE	NOON: NONE
PM: 05:00 PM - 06:00 PM	PM: 4:00 PM - 07:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	5900	0	6289
PHF	0.92		0.98

SOUTHBOUND (Bayfront Expy/SR 84)

	Left	Thru	Thru	Right	Total
AM	0	3279	1026	0	1366
NOON	0	0	0	0	0
PM	0	1116	333	0	4662

EASTBOUND (University Ave/SR 109)

	Left	Thru	Right
AM	0	0	0
NOON	0	0	0
PM	0	0	0

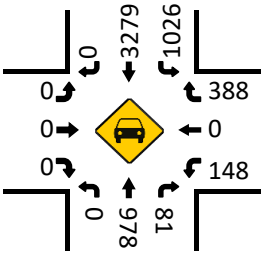
WESTBOUND (University Ave/SR 109)

	Left	Thru	Right
PM	1293	0	388
NOON	0	0	0
AM	83	0	148

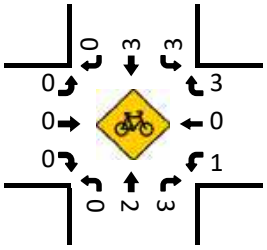
NORTHBOUND (Bayfront Expy/SR 84)

	Left	Thru	Thru	Right	Total
PM	1199	0	0	3369	95
NOON	0	0	0	0	0
AM	3427	0	0	978	81

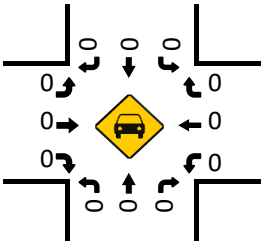
Totals (AM)



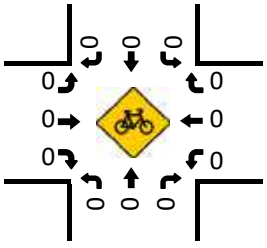
Total Bikes (AM)



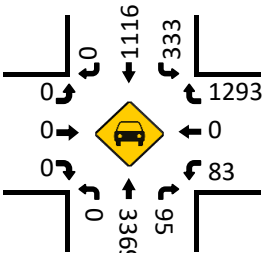
Totals (NOON)



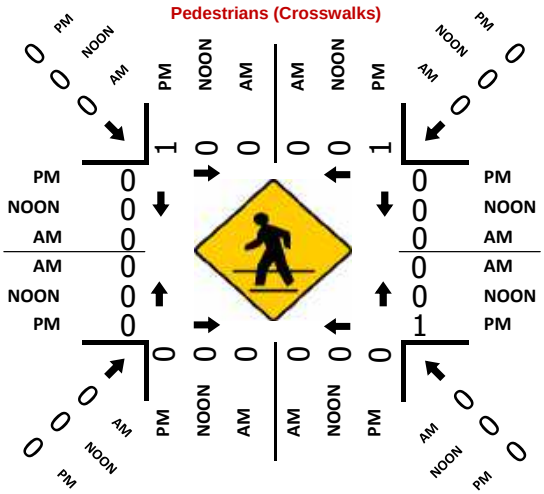
Total Bikes (NOON)



Totals (PM)



Pedestrians (Crosswalks)


PM
NOON
AM
1
0
0
1
0
0
0
0
0
0
0
0

National Data & Surveying Services Intersection Turning Movement Count

File Name: 23-080034-002
Start Date: 2/16/2023
Start Time: 7:00 AM
Site Code:
Comment 1: City of Menlo Park
Comment 2:
Comment 3:
Comment 4:

	Bayfront Expy/SR 84 Southbound				University Ave/SR 109 Westbound				Bayfront Expy/SR 84 Northbound				University Ave/SR 109 Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1237
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2687
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4283
7:00 AM	239	727	0	0	17	0	75	0	0	168	11	0	0	0	0	0	5813
7:15 AM	269	857	0	0	25	0	89	0	0	200	10	0	0	0	0	0	5900
7:30 AM	239	947	0	0	46	0	97	0	0	251	16	0	0	0	0	0	5867
7:45 AM	271	782	0	0	50	0	107	0	0	294	26	0	0	0	0	0	5593
8:00 AM	247	693	0	0	27	0	95	0	0	233	29	0	0	0	0	0	5477
8:15 AM	245	776	0	0	39	0	115	0	0	222	20	0	0	0	0	0	5532
8:30 AM	212	699	0	0	59	0	103	0	0	229	20	0	0	0	0	0	5365
8:45 AM	259	730	0	0	129	0	103	0	0	168	25	0	0	0	0	0	5213
9:00 AM	250	687	0	0	133	0	116	0	0	182	11	0	0	0	0	0	4836
9:15 AM	232	645	0	0	117	0	91	0	0	154	11	0	0	0	0	0	3457
9:30 AM	200	636	0	0	43	0	75	0	0	200	16	0	0	0	0	0	2207
9:45 AM	157	573	0	0	23	0	74	0	0	199	11	0	0	0	0	0	1037
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1496
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3007
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4499
4:00 PM	51	266	0	0	17	0	251	0	0	893	18	0	0	0	0	0	6000
4:15 PM	86	273	0	0	10	0	354	0	0	763	25	0	0	0	0	0	6015
4:30 PM	61	243	0	0	22	0	279	0	0	872	15	0	0	0	0	0	6079
4:45 PM	88	251	0	0	23	0	329	0	0	793	17	0	0	0	0	0	6192
5:00 PM	62	249	0	0	19	0	263	0	0	901	17	0	0	0	0	0	6289
5:15 PM	104	269	0	0	22	0	367	0	0	789	24	0	0	0	0	0	6082
5:30 PM	79	304	0	0	24	0	277	0	0	893	28	0	0	0	0	0	5730
5:45 PM	88	294	0	0	18	0	386	0	0	786	26	0	0	0	0	0	5199
6:00 PM	81	234	0	0	13	0	218	0	0	733	25	0	0	0	0	0	4657
6:15 PM	72	263	0	0	23	0	292	0	0	546	27	0	0	0	0	0	3353
6:30 PM	55	246	0	0	11	0	173	0	0	568	21	0	0	0	0	0	2130
6:45 PM	64	243	0	0	13	0	194	0	0	522	20	0	0	0	0	0	1056
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

National Data & Surveying Services Intersection Turning Movement Count

ALL TRAFFIC DATA

City of Menlo Park

(916) 771-8700
orders@atdtraffic.com

File Name : 23-080034-002
Date : 2/16/2023

All Vehicles & Uturns

	Bayfront Expy/SR 84 Southbound					University Ave/SR 109 Westbound					Bayfront Expy/SR 84 Northbound					University Ave/SR 109 Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	239	727	0	0	966	17	0	75	0	92	0	168	11	0	179	0	0	0	0	0	1237	0
7:15	269	857	0	0	1126	25	0	89	0	114	0	200	10	0	210	0	0	0	0	0	1450	0
7:30	239	947	0	0	1186	46	0	97	0	143	0	251	16	0	267	0	0	0	0	0	1596	0
7:45	271	782	0	0	1053	50	0	107	0	157	0	294	26	0	320	0	0	0	0	0	1530	0
Total	1018	3313	0	0	4331	138	0	368	0	506	0	913	63	0	976	0	0	0	0	0	5813	0
8:00	247	693	0	0	940	27	0	95	0	122	0	233	29	0	262	0	0	0	0	0	1324	0
8:15	245	776	0	0	1021	39	0	115	0	154	0	222	20	0	242	0	0	0	0	0	1417	0
8:30	212	699	0	0	911	59	0	103	0	162	0	229	20	0	249	0	0	0	0	0	1322	0
8:45	259	730	0	0	989	129	0	103	0	232	0	168	25	0	193	0	0	0	0	0	1414	0
Total	963	2898	0	0	3861	254	0	416	0	670	0	852	94	0	946	0	0	0	0	0	5477	0
9:00	250	687	0	0	937	133	0	116	0	249	0	182	11	0	193	0	0	0	0	0	1379	0
9:15	232	645	0	0	877	117	0	91	0	208	0	154	11	0	165	0	0	0	0	0	1250	0
9:30	200	636	0	0	836	43	0	75	0	118	0	200	16	0	216	0	0	0	0	0	1170	0
9:45	157	573	0	0	730	23	0	74	0	97	0	199	11	0	210	0	0	0	0	0	1037	0
Total	839	2541	0	0	3380	316	0	356	0	672	0	735	49	0	784	0	0	0	0	0	4836	0
16:00	51	266	0	0	317	17	0	251	0	268	0	893	18	0	911	0	0	0	0	0	1496	0
16:15	86	273	0	0	359	10	0	354	0	364	0	763	25	0	788	0	0	0	0	0	1511	0
16:30	61	243	0	0	304	22	0	279	0	301	0	872	15	0	887	0	0	0	0	0	1492	0
16:45	88	251	0	0	339	23	0	329	0	352	0	793	17	0	810	0	0	0	0	0	1501	0
Total	286	1033	0	0	1319	72	0	1213	0	1285	0	3321	75	0	3396	0	0	0	0	0	6000	0
17:00	62	249	0	0	311	19	0	263	0	282	0	901	17	0	918	0	0	0	0	0	1511	0
17:15	104	269	0	0	373	22	0	367	0	389	0	789	24	0	813	0	0	0	0	0	1575	0
17:30	79	304	0	0	383	24	0	277	0	301	0	893	28	0	921	0	0	0	0	0	1605	0
17:45	88	294	0	0	382	18	0	386	0	404	0	786	26	0	812	0	0	0	0	0	1598	0
Total	333	1116	0	0	1449	83	0	1293	0	1376	0	3369	95	0	3464	0	0	0	0	0	6289	0
18:00	81	234	0	0	315	13	0	218	0	231	0	733	25	0	758	0	0	0	0	0	1304	0
18:15	72	263	0	0	335	23	0	292	0	315	0	546	27	0	573	0	0	0	0	0	1223	0
18:30	55	246	0	0	301	11	0	173	0	184	0	568	21	0	589	0	0	0	0	0	1074	0
18:45	64	243	0	0	307	13	0	194	0	207	0	522	20	0	542	0	0	0	0	0	1056	0
Total	272	986	0	0	1258	60	0	877	0	937	0	2369	93	0	2462	0	0	0	0	0	4657	0
Grand Total	3711	11887	0	0	15598	923	0	4523	0	5446	0	11559	469	0	12028	0	0	0	0	0	33072	0
Apprch %	23.8%	76.2%	0.0%	0.0%		16.9%	0.0%	83.1%	0.0%		0.0%	96.1%	3.9%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	11.2%	35.9%	0.0%	0.0%	47.2%	2.8%	0.0%	13.7%	0.0%	16.5%	0.0%	35.0%	1.4%	0.0%	36.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	Bayfront Expy/SR 84 Southbound					University Ave/SR 109 Westbound					Bayfront Expy/SR 84 Northbound					University Ave/SR 109 Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	269	857	0	0	1126	25	0	89	0	114	0	200	10	0	210	0	0	0	0	0	1450
7:30	239	947	0	0	1186	46	0	97	0	143	0	251	16	0	267	0	0	0	0	0	1596
7:45	271	782	0	0	1053	50	0	107	0	157	0	294	26	0	320	0	0	0	0	0	1530
8:00	247	693	0	0	940	27	0	95	0	122	0	233	29	0	262	0	0	0	0	0	1324
Total Volume	1026	3279	0	0	4305	148	0	388	0	536	0	978	81	0	1059	0	0	0	0	0	5900
% App Total	23.8%	76.2%	0.0%	0.0%		27.6%	0.0%	72.4%	0.0%		0.0%	92.4%	7.6%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.946	.866	.000	.000	.907	.740	.000	.907	.000	.854	.000	.832	.698	.000	.827	.000	.000	.000	.000	.000	.924

PM PEAK HOUR	Bayfront Expy/SR 84 Southbound					University Ave/SR 109 Westbound					Bayfront Expy/SR 84 Northbound					University Ave/SR 109 Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	62	249	0	0	311	19	0	263	0	282	0	901	17	0	918	0	0	0	0	0	1511
17:15	104	269	0	0	373	22	0	367	0	389	0	789	24	0	813	0	0	0	0	0	1575
17:30	79	304	0	0	383	24	0	277	0	301	0	893	28	0	921	0	0	0	0	0	1605
17:45	88	294	0	0	382	18	0	386	0	404	0	786	26	0	812	0	0	0	0	0	1598
Total Volume	333	1116	0	0	1449	83	0	1293	0	1376	0	3369	95	0	3464	0	0	0	0	0	6289
% App Total	23.0%	77.0%	0.0%	0.0%		6.0%	0.0%	94.0%	0.0%		0.0%	97.3%	2.7%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.800	.918	.000	.000	.946	.865	.000	.837	.000	.851	.000	.935	.848	.000	.940	.000	.000	.000	.000	.000	.980

National Data & Surveying Services Intersection Turning Movement Count

File Name: 23-080034-002
Start Date: 2/16/2023
Start Time: 7:00 AM
Site Code:
Comment 1: City of Menlo Park
Comment 2:
Comment 3:
Comment 4:

	Bayfront Expy/SR 84 Southbound				University Ave/SR 109 Westbound				Bayfront Expy/SR 84 Northbound				University Ave/SR 109 Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	12
7:15 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
7:30 AM	0	0	0	0	1	0	0	0	0	1	3	0	0	0	0	0	16
7:45 AM	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	17
8:00 AM	0	2	0	0	0	0	2	0	0	1	0	0	0	0	0	0	21
8:15 AM	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	18
8:30 AM	1	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	24
8:45 AM	2	2	0	0	1	0	2	1	0	0	0	0	0	0	0	0	21
9:00 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	15
9:15 AM	1	1	0	0	0	0	2	0	0	2	3	0	0	0	0	0	13
9:30 AM	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	4
9:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	15
4:15 PM	0	2	0	0	0	0	1	0	0	0	2	0	0	0	0	0	17
4:30 PM	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	15
4:45 PM	0	0	0	0	3	0	1	0	0	0	2	0	0	0	0	0	15
5:00 PM	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	16
5:15 PM	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	14
5:30 PM	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	14
5:45 PM	5	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	11
6:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	5
6:15 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
6:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
6:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

National Data & Surveying Services Intersection Turning Movement Count

ALL TRAFFIC DATA

City of Menlo Park

(916) 771-8700
orders@atdtraffic.com

File Name : 23-080034-002
Date : 2/16/2023

All Bikes and Peds

	Bayfront Expy/SR 84 Southbound					University Ave/SR 109 Westbound					Bayfront Expy/SR 84 Northbound					University Ave/SR 109 Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0
7:15	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:30	0	0	0	0	0	1	0	0	0	1	0	1	3	0	4	0	0	0	0	0	5	0
7:45	1	1	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	0
Total	3	1	0	0	4	1	0	1	0	2	0	1	5	0	6	0	0	0	0	0	12	0
8:00	0	2	0	0	2	0	0	2	0	2	0	1	0	0	1	0	0	0	0	0	5	0
8:15	1	1	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0
8:30	1	2	0	0	3	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	6	0
8:45	2	2	0	0	4	1	0	2	1	3	0	0	0	0	0	0	0	0	0	0	7	1
Total	4	7	0	0	11	2	0	7	1	9	0	1	0	0	1	0	0	0	0	0	21	1
9:00	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0
9:15	1	1	0	0	2	0	0	2	0	2	0	2	3	0	5	0	0	0	0	0	9	0
9:30	0	2	0	0	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	1
9:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	2	4	0	0	6	1	0	2	1	3	0	2	4	0	6	0	0	0	0	0	15	1
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	2	0	0	2	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	5	0
16:30	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	3	0
16:45	0	0	0	0	0	3	0	1	0	4	0	0	2	0	2	0	0	0	0	0	6	0
Total	0	2	0	0	2	3	0	4	0	7	0	1	5	0	6	0	0	0	0	0	15	0
17:00	2	0	0	1	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	1
17:15	0	0	0	1	0	0	0	1	0	1	0	1	1	0	2	0	0	0	0	0	3	1
17:30	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	3	0
17:45	5	0	0	0	5	0	0	1	1	1	0	1	0	0	1	0	0	0	0	0	7	1
Total	7	1	0	2	8	0	0	3	1	3	0	4	1	0	5	0	0	0	0	0	16	3
18:00	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
18:15	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
18:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
18:45	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	1	2	0	0	3	0	0	0	3	0	0	2	0	0	2	0	0	0	0	0	5	3
Grand Total	17	17	0	2	34	7	0	17	6	24	0	11	15	0	26	0	0	0	0	0	84	8
Apprch %	50.0%	50.0%	0.0%			29.2%	0.0%	70.8%			0.0%	42.3%	57.7%			0.0%	0.0%	0.0%				
Total %	20.2%	20.2%	0.0%		40.5%	8.3%	0.0%	20.2%		28.6%	0.0%	13.1%	17.9%		31.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

AM PEAK HOUR	Bayfront Expy/SR 84 Southbound					University Ave/SR 109 Westbound					Bayfront Expy/SR 84 Northbound					University Ave/SR 109 Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30	0	0	0	0	0	1	0	0	0	1	0	1	3	0	4	0	0	0	0	0	5
7:45	1	1	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
8:00	0	2	0	0	2	0	0	2	0	2	0	1	0	0	1	0	0	0	0	0	5
Total Volume	3	3	0	0	6	1	0	3	0	4	0	2	3	0	5	0	0	0	0	0	15
% App Total	50.0%	50.0%	0.0%			25.0%	0.0%	75.0%			0.0%	40.0%	60.0%			0.0%	0.0%	0.0%			
PHF	.375	.375	.000		.750	.250	.000	.375		.500	.000	.500	.250		.313	.000	.000	.000		.000	.750

PM PEAK HOUR	Bayfront Expy/SR 84 Southbound					University Ave/SR 109 Westbound					Bayfront Expy/SR 84 Northbound					University Ave/SR 109 Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	2	0	0	1	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
17:15	0	0	0	1	0	0	0	1	0	1	0	1	1	0	2	0	0	0	0	0	3
17:30	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	3
17:45	5	0	0	0	5	0	0	1	1	1	0	1	0	0	1	0	0	0	0	0	7
Total Volume	7	1	0	2	8	0	0	3	1	3	0	4	1	0	5	0	0	0	0	0	16
% App Total	87.5%	12.5%	0.0%			0.0%	0.0%	100.0%			0.0%	80.0%	20.0%			0.0%	0.0%	0.0%			
PHF	.350	.250	.000		.400	.000	.000	.750		.750	.000	1.000	.250		.625	.000	.000	.000		.000	.571

Appendix B
Middlefield Road and Ravenswood Avenue Microsimulation

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Memorandum

Date: July 10, 2024

To: Ms. Jessica Viramontes, ICF

From: Trisha Dudala, Katie Riutta

Subject: Traffic Operations Analysis for the Proposed Parkline Project in Menlo Park, CA

Hexagon Transportation Consultants, Inc. has completed a traffic operations analysis for the proposed Parkline project in Menlo Park, CA. The project site, located at 333 Ravenswood Avenue, is currently occupied by the existing SRI International campus. The proposed project would include a new office/research and development (R&D) campus with no increase in office/R&D square footage; up to 550 new dwelling units at a range of affordability levels (comprised of 450 multi-family units and townhomes, and a proposed land dedication to an affordable housing developer that could accommodate up to 100 affordable units); and new bicycle and pedestrian connections. In total, the proposed project would result in approximately 1,768,802 square feet (s.f.) of mixed-use development, with approximately 1,093,602 s.f. of office/R&D uses and approximately 675,200 s.f. of residential uses. The proposed project would demolish all buildings on SRI International's Campus, excluding Buildings P, S, and T, which would remain onsite and be operated by SRI International.

The residential area would have three access points that would serve the residential uses using existing and/or relocated driveways at the following locations:

- Ravenswood Avenue, toward the west side of the Project Site;
- Laurel Street, toward the middle of the residential area, for the multi-family residential buildings; and
- Laurel Street, toward the south end of the residential area, for the townhouses.

The office/R&D area would have four access points that would serve the commercial portion of the site by using existing and/or relocated driveways at the following locations:

- Ravenswood Avenue, toward the west end of the office/R&D area;
- Ravenswood Avenue, toward the east end of the office/R&D area;
- Middlefield Road at Ringwood Avenue; and
- Middlefield Road at Seminary Drive.

The proposed project is expected to generate 1,368 AM peak hour trips and 1,316 PM peak hour trips after applying a 25% TDM[1] reduction.

The project also proposes a variant, called the "Increased Development Variant", which is a variation of the proposed project at the same Project Site (although the Project Site would be slightly expanded to include 201 Ravenswood Avenue), generally with the same objectives, background, and development controls but with the following differences:

[1] After initiation of this simulation analysis, the Proposed Project's TDM reduction was revised to a 28% trip reduction for the office/R&D land use and a 25% trip reduction for the residential land use. This study is therefore considered slightly conservative because it did not assume the extra 3% trip reduction for the office/R&D land use.

1. The Project Site has been expanded to include the parcel at 201 Ravenswood Avenue to create a continuous Project frontage area along Ravenswood Avenue and increase the size of the overall Project Site by approximately 43,762 s.f. (approximately 1.0 acre), for a total of approximately 64.2 acres;
2. The Project Variant would include up to 250 additional residential rental dwelling units compared to the Proposed Project (an increase from 550 to 800 units, inclusive of up to 154 units to be developed by an affordable housing developer);
3. The Project Variant would reduce the underground parking footprint within the site, both by removing underground parking from the multifamily residential buildings in the residential area and removing the underground parking connection between office/research-and-development (R&D) Building O1 and Building O5. As a result, Parking Garage (PG) 1 and PG2 increase in square footage and height compared to the Proposed Project and the number of structured spaces increases by 400 (with no change in the total number of parking spaces proposed for the office/R&D buildings); and
4. The Project Variant would include an approximately 2- to 3-million-gallon emergency water reservoir that would be buried below grade in the northeast area of the Project Site, in addition to a small pump station, an emergency well, and related improvements that would be built at and below grade (i.e., emergency generator, disinfection system, surge tank) (referred to as "reservoir" throughout this document). It would be built and operated by the city of Menlo Park.

As part of this variant, the project would relocate some housing units to the Middlefield Road/Ravenswood Avenue corner of the project site, and reconfigure the site circulation so that the majority of residential vehicles would need to use the office/R&D driveways. In addition to the proposed driveways on Middlefield Road listed above, access to the project site would be provided on Ravenswood Avenue at W 1st Street and four new driveways between Laurel Street and W 1st Street. Two of these driveways are the same office driveways as the main project. The other two driveways would be located just north and south of Pine Street for the residential land use. The proposed variant is expected to generate 1,441 AM peak hour trips and 1,393 PM peak hour trips after applying a 25% TDM[2] reduction.

This report presents the results of the simulation analysis conducted along Middlefield Road between Oak Grove Avenue and Seminary Drive and along Ravenswood Avenue between Middlefield Road and Laurel Street. Existing traffic congestion and long queues were observed during peak traffic periods along the project frontages on Middlefield Road and Ravenswood Avenue. The project would add a considerable amount of traffic to Ravenswood Avenue and Middlefield Road. As such, a Synchro/SimTraffic traffic operations model was used to identify and test improvements that would reduce project congestion. Presented in this report are the results of a detailed analysis of the traffic operations issues along Middlefield Road and Ravenswood Avenue and identification and evaluation of potential feasible improvements to improve traffic congestion and flow along these corridors. The analysis considers traffic operations under existing conditions, background conditions, background plus project conditions, and background plus variant conditions. The results and recommendations of this analysis is referenced in the Transportation Impact Analysis report prepared for this project. A map of the study area is shown on Figure 1.

[2] After initiation of this simulation analysis, the Project Variant's TDM reduction was revised to a 28% trip reduction for the office/R&D land use and a 25% trip reduction for the residential land use. This study is therefore considered slightly conservative because it did not assume the extra 3% trip reduction for the office/R&D land use.

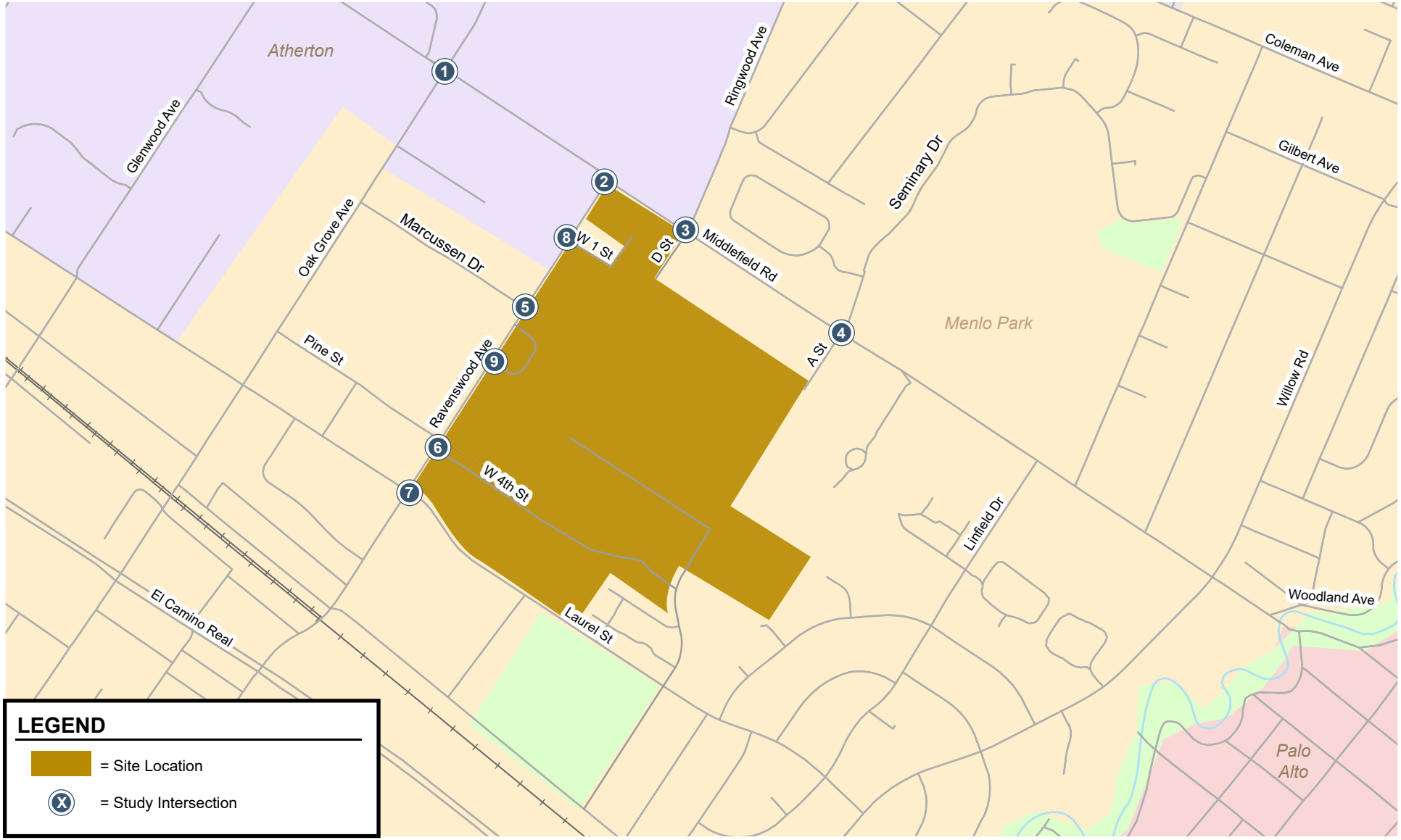


Figure 1
Site Location and Study Intersections

Scope of Study

This study was conducted for the purpose of documenting existing, background, background plus project, and background plus variant conditions and identifying potential feasible improvements to improve traffic congestion and flow along Middlefield Road and Ravenswood Avenue. This corridor study includes an analysis of weekday AM (7-9 AM) and PM (4-6 PM) peak hour traffic conditions for the following nine study intersections. These intersections are shown on Figure 1.

Study Intersections

1. Middlefield Road & Oak Grove Avenue [Atherton, signal]
2. Middlefield Road & Ravenswood Avenue [signal]
3. Middlefield Road & Ringwood Avenue/D Street [Project Driveway, signal]
4. Middlefield Road & Seminary Drive/A Street [Project Driveway, unsignalized]
5. Marcussen Drive & Ravenswood Avenue [unsignalized]
6. Pine Street/4th St & Ravenswood Avenue [Project Driveway, unsignalized]
7. Laurel Street & Ravenswood Avenue [signal]
8. W 1st Street & Ravenswood Avenue [Project Driveway, unsignalized]
9. Loop Road & Ravenswood Avenue [Project Driveway, unsignalized]

Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing AM and PM peak-hour traffic volumes were obtained from manual turning-movement counts conducted in May 2023. The simulation model requires that the volumes between intersections in the network be balanced to ensure that vehicles do not appear or disappear between intersections. Therefore, the counts were balanced between adjacent intersections.

Scenario 2: *Year 2027 Background Conditions.* The background scenario assumed a year 2027 horizon[3] and was analyzed using the model. Traffic volumes were obtained from the Menlo Park Travel Demand Model and adjusted based on existing counts and model results. In addition, traffic and roadway improvements associated with the approved developments were assumed as directed by City Staff.

Scenario 3: *Year 2027 Background Plus Project Conditions.* Background plus project conditions reflect the projected traffic volumes with the completion of the project and future developments. Project-generated traffic was added to the background condition traffic volumes. The background plus project scenario was evaluated relative to the background scenario.

Scenario 4: *Year 2027 Background Plus Variant Conditions.* Background plus variant conditions reflect the projected traffic volumes with the completion of the variant and future developments. Variant-generated traffic was added to the background conditions traffic volumes. The background plus variant scenario was evaluated relative to the background plus project scenario.

[3] 2027 is the earliest year for expected occupancy when this analysis started. The expected occupancy has since been revised to year 2031. However, as discussed in detail in the *Parkline Transportation Impact Analysis* report, there would be no substantive changes to any conclusions whether the near-term scenario is studied with a horizon year of 2027 or 2031.

Analysis Methodology

This section describes the methods and performance criteria used to evaluate traffic operations along the Middlefield Road and Ravenswood Avenue corridors between Oak Grove Avenue and Seminary Drive and between Middlefield Road and Laurel Street, respectively.

Analysis Method

Due to the close proximity of the study intersections, a simulation analysis was conducted using Synchro/SimTraffic (version 12). Unlike macroscopic models of isolated intersection operations, such as the *Highway Capacity Manual* intersection level of service methodology, SimTraffic is a microscopic model that measures the full impact of queuing and blocking attributed to closely spaced intersections.

The existing conditions SimTraffic model was calibrated and validated to existing conditions based on existing lane geometry, existing AM and PM peak hour traffic counts, observed peak-hour vehicular queues, and the observed signal timing.

Level of Service Criteria

The average delay time (measured in seconds per vehicle) calculated by the simulation model was correlated to Level of Service (LOS) based on the thresholds contained in the *Highway Capacity Manual*. Level of Service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The correlation between delay and level of service is shown on Table 1 for signalized intersections and Table 2 for unsignalized intersections.

Table 1
Signalized Intersection Level of Service Definitions Based on Average Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though some vehicles may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *Highway Capacity Manual*.

Table 2
Unsignalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Delay Per Vehicle (Sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

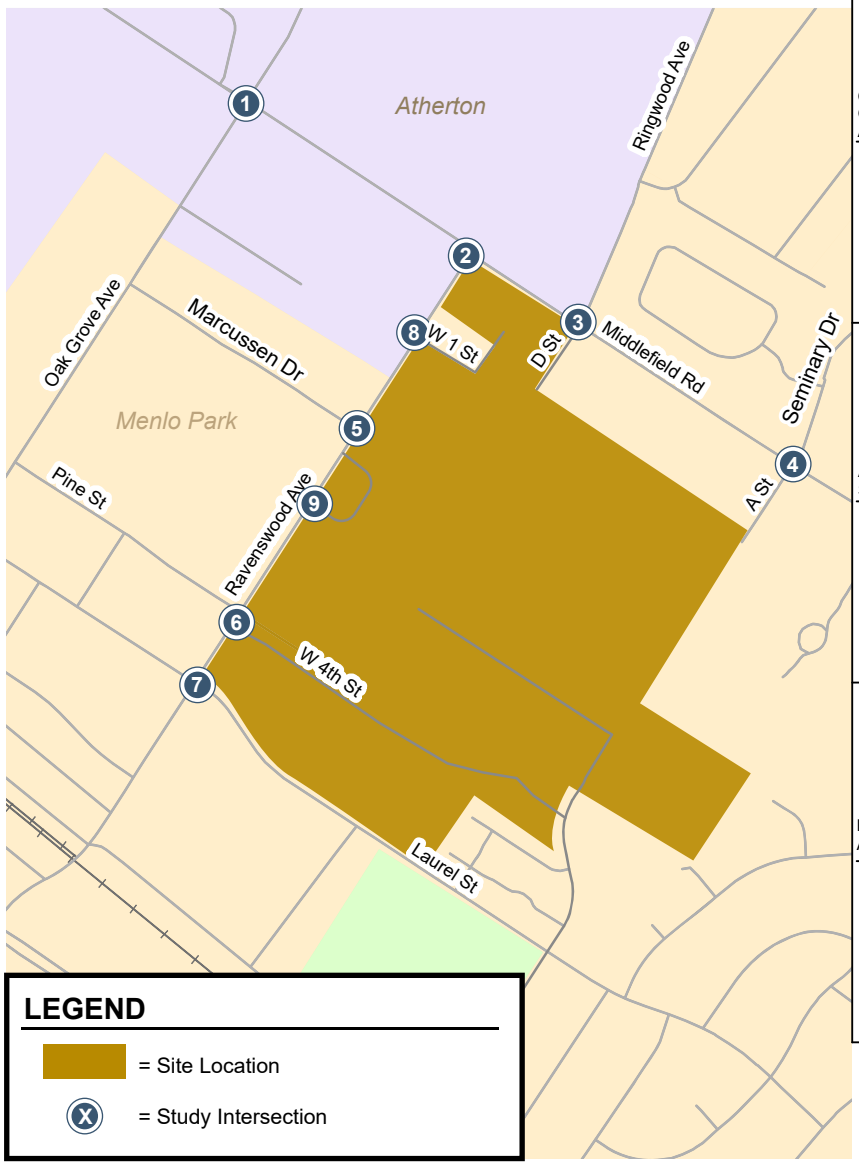
Source: Transportation Research Board, *Highway Capacity Manual.*

Existing Conditions

Hexagon collected existing roadway geometry, peak hour intersection turning movement volumes, and intersection queuing characteristics within the study area. Most traffic congestion in the study area was observed to occur during the morning (7:00 – 9:00 AM) and evening (4:00 – 6:00 PM) peak commute hours. The existing lane geometry at the study intersections are shown on Figure 2. At the time field observations were conducted, Middlefield Road had two northbound lanes at the intersection of Seminary Drive, which is reflected in the existing conditions analysis. However, the city recently restriped Middlefield Road to consist of one northbound lane at the intersection of Middlefield Road and Seminary Drive, which is reflected in the background conditions analysis.

Intersection Turning Movements Volumes

Existing AM and PM peak-hour traffic volumes were obtained from the May 2023 manual turning-movement counts. The existing traffic volumes are shown on Figure 3.



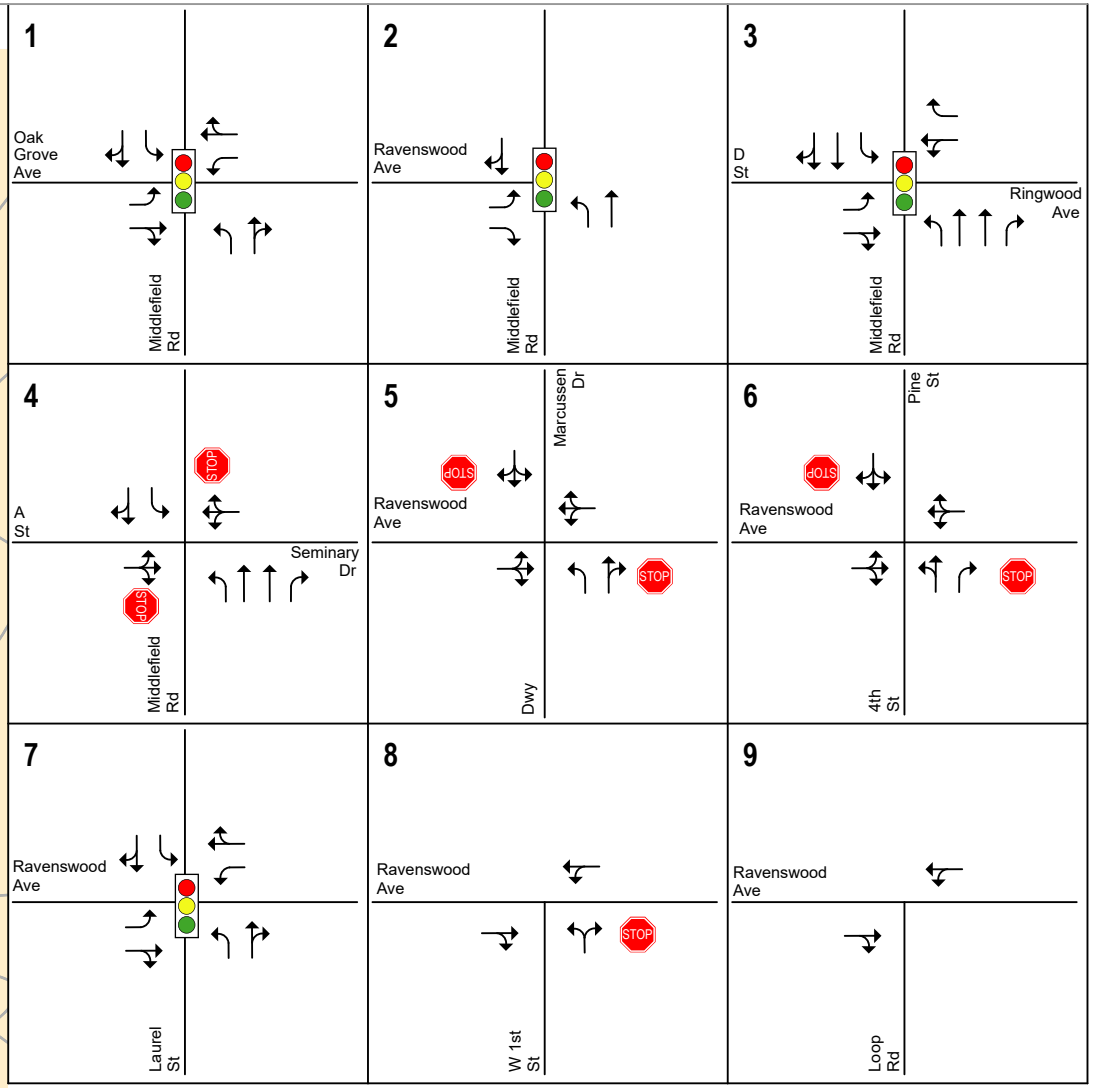
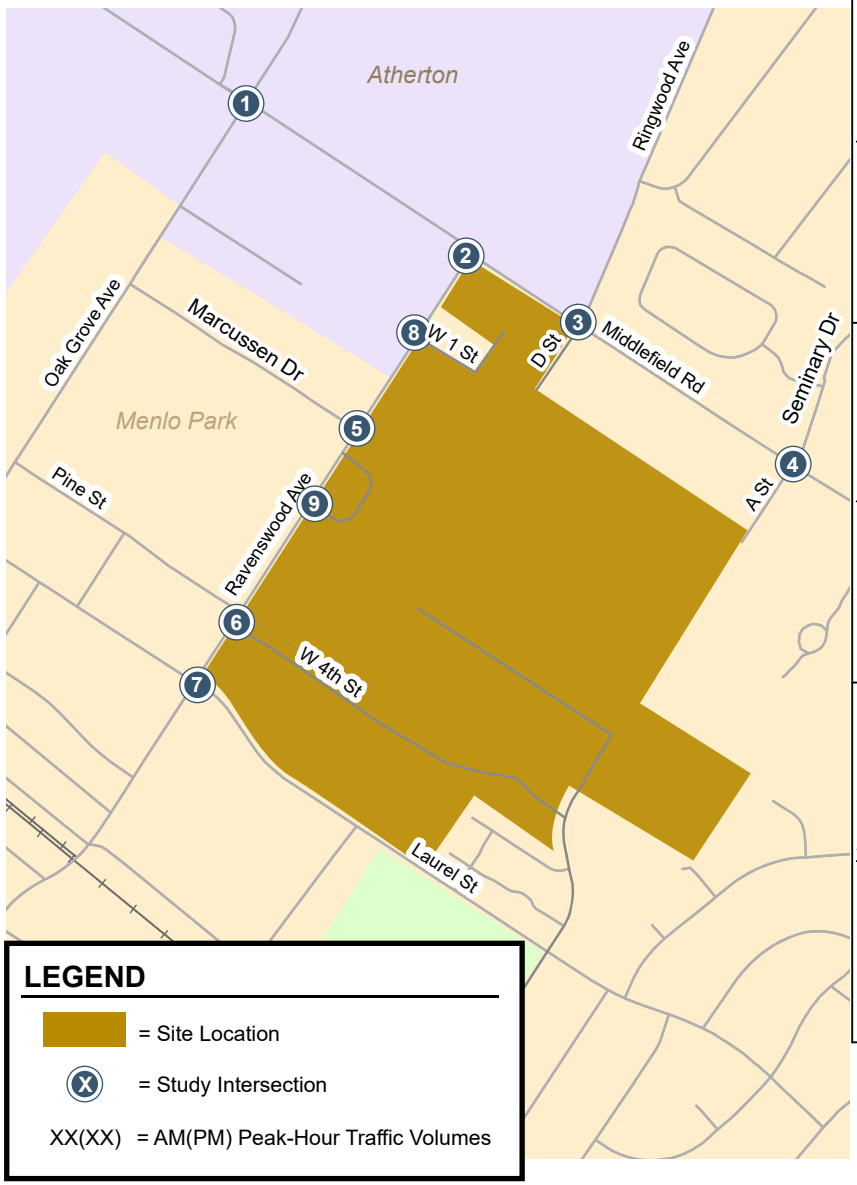


Figure 2
Existing Lane Configurations

NORTH
Not to Scale



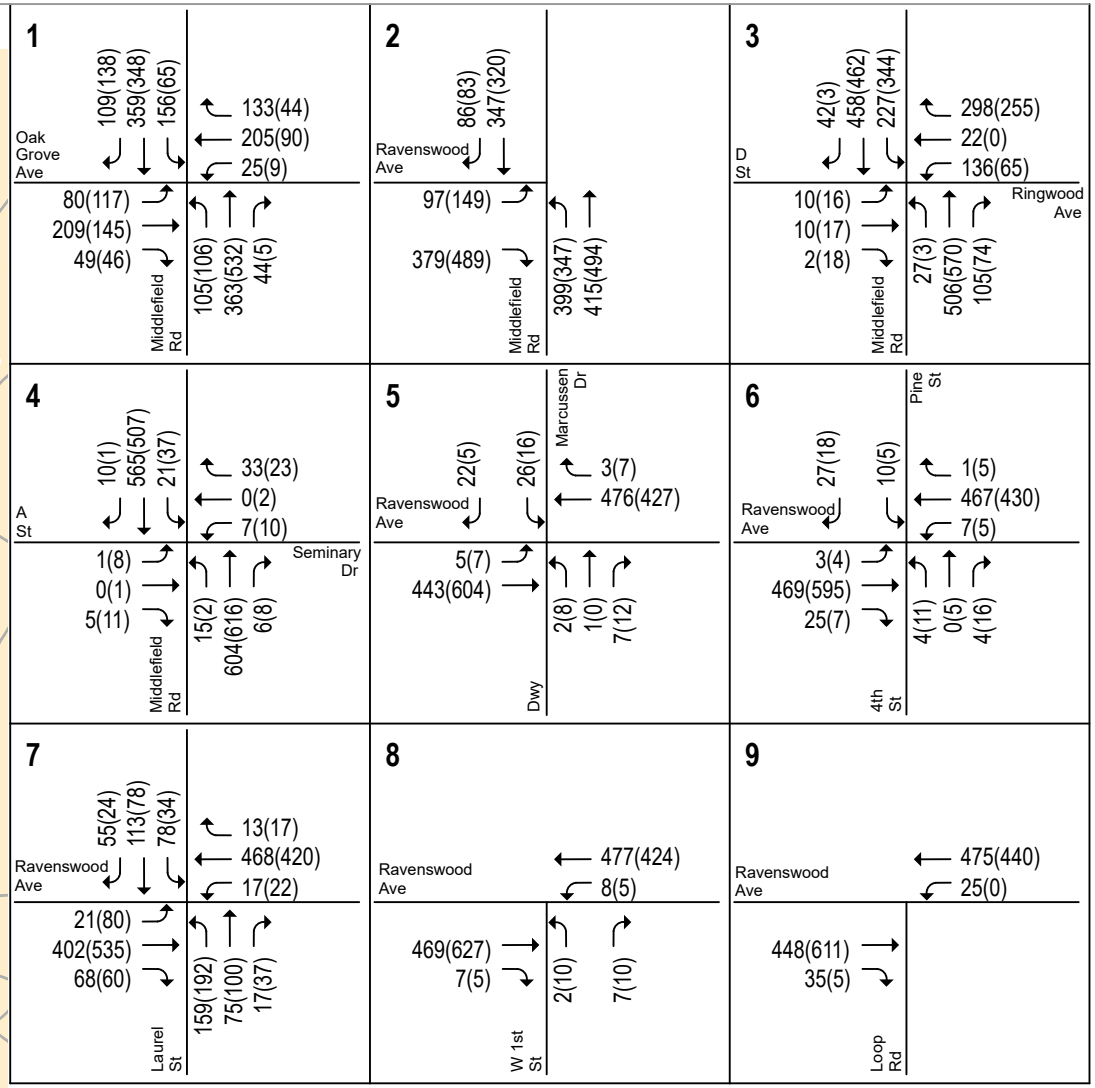


Figure 3
Existing Traffic Volumes

NORTH
Not to Scale

Field Observations

Hexagon conducted field observations of traffic congestion and vehicle queuing at the study intersections during the AM and PM peak periods in May of 2023. Field observations showed that some operational problems currently occur during the peak commute hours. These issues are described below.

Middlefield Road & Ravenswood Avenue

During the AM peak hour, the northbound left turn queue from Middlefield Road to westbound Ravenswood Avenue often reached the Ringwood Avenue intersection. During the peak time, the northbound left turn green time increased to allow more vehicles through the intersection. The first cycle with a long northbound left turn queue resulted in 10 vehicles waiting for a second cycle. However, the cycles after that had increased green time and allowed the entire queue to clear in one cycle.

During the PM peak hour, the southbound left turn queue at the downstream intersection of Ringwood Avenue/Middlefield Road often reached close to the Ravenswood Avenue intersection. Vehicles expecting to continue southbound on Middlefield Road were able to go around the queue into the second lane. Therefore, all southbound vehicles were able to clear the intersection in one cycle.

Middlefield Road & Ringwood Avenue

During the AM peak hour, the downstream northbound left turn queue at Ravenswood Avenue often reached the Ringwood Avenue intersection. This created a long westbound right turn queue at Ringwood Avenue. However, because the northbound left turn signal at Ravenswood Avenue turned green when the westbound movement turned green at Ringwood Avenue, the queues were able to clear in one cycle.

During the PM peak hour, the southbound left turn queue often reached close to the upstream intersection at Ravenswood Avenue/Middlefield Road. Vehicles expecting to continue southbound on Middlefield Road were able to go around the queue into the second lane. Therefore, all southbound vehicles were able to clear the intersection in one cycle.

Middlefield Road & Seminary Drive

There were no traffic operational deficiencies observed during the AM and PM peak hours. The upstream and downstream signals provided gaps for traffic on Seminary Drive to turn onto Middlefield Road.

Ravenswood Avenue & Laurel Street

During the AM peak hour, the downstream westbound queue at the Alma Street/Ravenswood Avenue intersection occasionally reached the Laurel Street intersection. This caused the northbound left-turn queue to wait for the queue to begin clearing the receiving lane. However, the green time allowed all vehicles to clear the intersection.

During the PM peak hour, Hexagon observed the Caltrain running during one of the cycles. The Caltrain came during the eastbound/westbound through green time, which caused the queue to back up into the Laurel Street intersection. However, the green time allowed all vehicles to clear the intersection.

Model Development and Calibration

The Synchro model was developed by drawing the roadway network using an aerial photo of the study area as a background image. Geometric information such as number of lanes, curvature, turn restrictions, and location of lane drops and lane additions were based on aerial photographs and field observations. Intersection signal operations were based on measuring the cycle lengths and splits at each of the study intersections in the field. The existing AM and PM peak hour counts were used as input volumes to develop the existing conditions model.

Model Validation

During the validation process, the model estimates were compared to the field data to measure the model's accuracy. The following criteria were used:

- Turning movement volumes for more than 85% of the cases should have a GEH (Geoffrey E. Havers) statistic of less than 5. GEH statistic is a measure of goodness of fit named after the statistician who developed it. The model served volume at each of the nine study intersections were compared to the raw turning movement counts. The GEH statistic for the individual turning movements was calculated to be less than 5 and the GEH statistic for the total volume through the intersection calculated to be less than 3.
- The visual queuing shown in the model should match queues observed in the field. Queues shown in the model matched field observations. During the AM peak hour, the model showed long queues on northbound Middlefield Road at Ravenswood Avenue and on westbound Ravenswood Avenue near Laurel Street. During the PM peak hour, the model showed long queues on southbound Middlefield Road at Ringwood Avenue. The model queues matched the queues observed in the field.

Existing Conditions Level of Service Analysis

The calibrated and validated SimTraffic model was used to analyze traffic operations at the nine study intersections along the corridors. Table 3 shows the average delay and the corresponding LOS during the AM and PM peak hour periods under existing conditions. The average delay (measured in seconds per vehicle) calculated by the microscopic simulation model was correlated to LOS based on the thresholds contained in the *Highway Capacity Manual*.

The results of the level of service analysis show that all study intersections currently operate at acceptable conditions during both peak hours.

Table 3
Existing Conditions Level of Service Analysis

#	Intersection	Control	Peak Hour	Count Date	Existing Conditions Avg. Delay [1]	Existing Conditions LOS
1	Middlefield Rd & Oak Grove Ave	Signal	AM	05/24/23	40.1	D
			PM	05/24/23	31.2	C
2	Middlefield Rd & Ravenswood Ave	Signal	AM	05/24/23	39.0	D
			PM	05/24/23	30.0	C
3	Middlefield Rd & Ringwood Ave	Signal	AM	05/24/23	34.5	C
			PM	05/24/23	28.0	C
4	Middlefield Rd & Seminary Dr	TWSC	AM	05/24/23	9.9	A
			PM	05/24/23	12.1	B
5	Marcussen Dr & Ravenswood Ave	TWSC	AM	05/24/23	22.7	C
			PM	05/24/23	13.9	B
6	Pine St & Ravenswood Ave	TWSC	AM	05/24/23	17.3	C
			PM	05/24/23	23.5	C
7	Laurel St & Ravenswood Ave	Signal	AM	05/24/23	30.2	C
			PM	05/24/23	47.9	D
8	W 1st St & Ravenswood Ave	OWSC	AM	05/24/23	15.6	C
			PM	05/24/23	14.7	B
9	Loop Rd & Ravenswood Ave	OWSC	AM	05/24/23	5.1	A
			PM	05/24/23	0.0	A

Notes:
Avg Delay = Average Delay in seconds; LOS = Level of Service; TWSC = Two Way Stop Control; OWSC = One Way Stop Control

[1] At signalized intersections, delay shown is the weighted average delay for all vehicles entering the intersection calculated using the calibrated SimTraffic model. At unsignalized intersections, the delay is shown for the worst stop controlled approach or uncontrolled left-turn movement, whichever is greater.

Existing Conditions Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis. The queues (measured in feet per lane) were calculated by the microscopic simulation model. Table 4 shows the existing storage lengths, 95th percentile and average queues for all intersection movements during the AM and PM peak hour periods under existing conditions. Where there are no turn pockets, the storage length was assumed to be the distance to the adjacent upstream intersection.

Table 4
Existing Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Existing Conditions 95th Percentile Queue (ft/ln)[1]	Existing Conditions Average Queue (ft/ln)[2]
1	Middlefield Rd & Oak Grove Ave	EBL	AM	245	176	78
			PM		124	64
		EBTR	AM	425	304	160
			PM		181	100
		WBL	AM	45	**65**	24
			PM		39	0
		WBTR	AM	130	**356**	**209**
			PM		**150**	77
		NBL	AM	130	**179**	93
			PM		**163**	85
		NBTR	AM	985	426	260
			PM		386	228
		SBL	AM	150	**190**	103
			PM		**157**	63
		SBTR	AM	1000	635	318
			PM		499	293
2	Middlefield Rd & Ravenswood Ave	EBL	AM	355	**370**	149
			PM		**365**	171
		EBR	AM	125	**220**	90
			PM		**226**	91
		NBL	AM	435	**455**	301
			PM		356	238
		NBT	AM	435	245	53
			PM		155	68
		SBTR	AM	985	805	344
			PM		450	295

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the existing queue length exceeds the existing storage capacity.

Table 4 (continued)
Existing Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Existing Conditions 95th Percentile Queue (ft/ln)[1]	Existing Conditions Average Queue (ft/ln)[2]
3	Middlefield Rd & Ringwood Ave/Project Driveway	EBL	AM	145	36	0
			PM		41	0
		EBTR	AM	145	39	0
			PM		52	21
		WBLT	AM	250	192	116
			PM		97	48
		WBR	AM	250	179	96
			PM		148	82
		NBL	AM	200	86	29
			PM		33	0
		NBT1	AM	885	284	120
			PM		260	118
		NBT2	AM	885	392	204
			PM		390	225
		NBR	AM	150	**174**	73
			PM		**159**	58
		SBL	AM	160	**203**	156
			PM		**194**	**166**
		SBT	AM	450	443	250
			PM		424	245
		SBTR	AM	320	**512**	177
			PM		**410**	139
4	Middlefield Rd & Seminary Dr/Project Driveway	EBLTR	AM	250	27	0
			PM		43	16
		WBLTR	AM	250	48	20
			PM		41	18
		NBL	AM	65	26	0
			PM		0	0
		NBT	AM	360	0	0
			PM		0	0
		NBR	AM	105	0	0
			PM		0	0
		SBL	AM	100	28	0
			PM		38	0
		SBTR	AM	885	38	0
			PM		19	0

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the existing queue length exceeds the existing storage capacity.

Table 4 (continued)
Existing Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Existing Conditions 95th Percentile Queue (ft/ln)[1]	Existing Conditions Average Queue (ft/ln)[2]
5	Marcussen Dr & Ravenswood Ave	EBLTR	AM	730	74	0
			PM		43	0
		WBLTR	AM	760	23	0
			PM		0	0
		NBL	AM	135	0	0
			PM		28	0
		NBTR	AM	135	28	0
			PM		36	0
		SBLTR	AM	985	83	32
			PM		45	17
6	Pine St/Project Driveway & Ravenswood Ave	EBLTR	AM	210	34	0
			PM		51	0
		WBLTR	AM	730	168	56
			PM		253	97
		NBLT	AM	230	21	0
			PM		40	0
		NBR	AM	230	19	0
			PM		37	0
		SBLTR	AM	1000	60	25
			PM		49	19
7	Laurel St & Ravenswood Ave	EBL	AM	125	72	21
			PM		117	58
		EBTR	AM	365	**588**	274
			PM		**986**	**544**
		WBL	AM	100	56	17
			PM		71	25
		WBTR	AM	220	**302**	184
			PM		**306**	211
		NBL	AM	115	**137**	88
			PM		**142**	102
		NBTR	AM	1250	196	82
			PM		375	199
		SBL	AM	130	130	64
			PM		96	36
		SBTR	AM	480	191	109
			PM		182	104

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the existing queue length exceeds the existing storage capacity.

Table 4 (continued)
Existing Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Existing Conditions 95th Percentile Queue (ft/ln)[1]	Existing Conditions Average Queue (ft/ln)[2]
8	W 1st St/Project Driveway & Ravenswood Ave	EBTR	AM	365	161	27
			PM		76	0
		WBLT	AM	365	65	0
			PM		47	0
		NBLR	AM	255	31	0
			PM		45	17
9	Loop Rd/Project Driveway & Ravenswood Ave	EBTR	AM	525	52	0
			PM		0	0
		WBLT	AM	175	98	22
			PM		0	0

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.

The results of the queuing analysis show that the following lanes at the study intersections experience 95th percentile queues that extend beyond the existing storage capacity during at least one of the peak hours as described below.

AM Peak Hour

- Middlefield Road & Oak Grove Avenue
  - Westbound Left-Turn
  - Westbound Shared Through-Right
  - Northbound Left-Turn
  - Southbound Left-Turn
- Middlefield Road & Ravenswood Avenue
  - Eastbound Left-Turn
  - Eastbound Right-Turn
  - Northbound Left-Turn
- Middlefield Road & Ringwood Avenue
  - Northbound Right-Turn
  - Southbound Left-Turn
  - Southbound Shared Through-Right
- Laurel Street & Ravenswood Avenue
  - Eastbound Shared Through-Right
  - Westbound Shared Through-Right
  - Northbound Left-Turn

PM Peak Hour

- Middlefield Road & Oak Grove Avenue
  - Westbound Shared Through-Right
  - Northbound Left-Turn
  - Southbound Left-Turn
- Middlefield Road & Ravenswood Avenue
  - Eastbound Left-Turn
  - Eastbound Right-Turn
- Middlefield Road & Ringwood Avenue
  - Northbound Right-Turn
  - Southbound Left-Turn
  - Southbound Shared Through-Right
- Laurel Street & Ravenswood Avenue
  - Eastbound Shared Through-Right
  - Westbound Shared Through-Right
  - Northbound Left-Turn

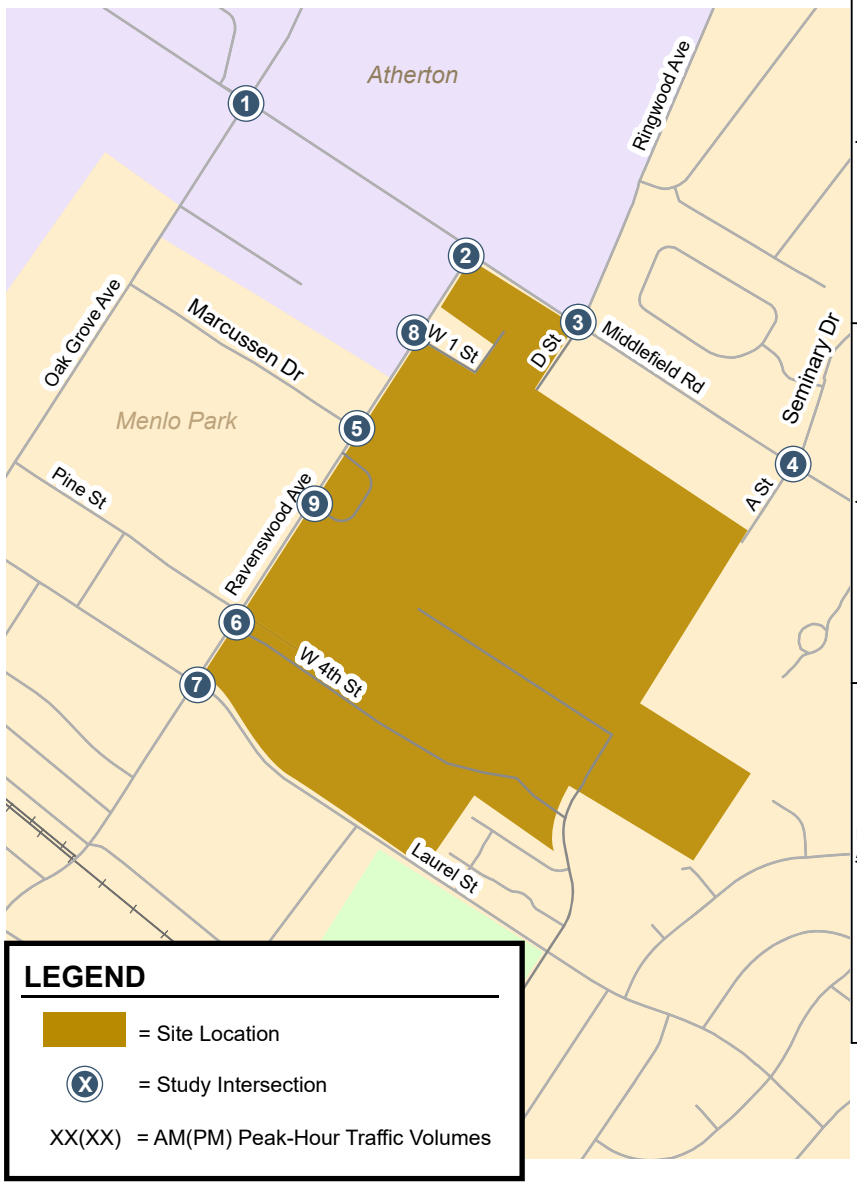
Background Conditions

The background scenario assumed a year 2027 horizon[4] and was analyzed using the model. Traffic volumes were obtained from the Menlo Park Travel Demand Model and adjusted based on existing counts and model results. The traffic volumes under background conditions are shown on Figure 4. Under background conditions, the existing lane striping, which reflects one lane in each direction on Middlefield Road south of Seminary Drive was assumed.

Background Conditions Level of Service Analysis

Table 5 shows the average delay and the corresponding LOS during the AM and PM peak hour periods under background conditions. The results of the level of service analysis show that all study intersections would operate at similar acceptable conditions as the existing scenario during both peak hours.

[4] 2027 is the earliest year for expected occupancy when this analysis started. The expected occupancy has since been revised to year 2031. However, as discussed in detail in the *Parkline Transportation Impact Analysis* report, there would be no substantive changes to any conclusions whether the near-term scenario is studied with a horizon year of 2027 or 2031.



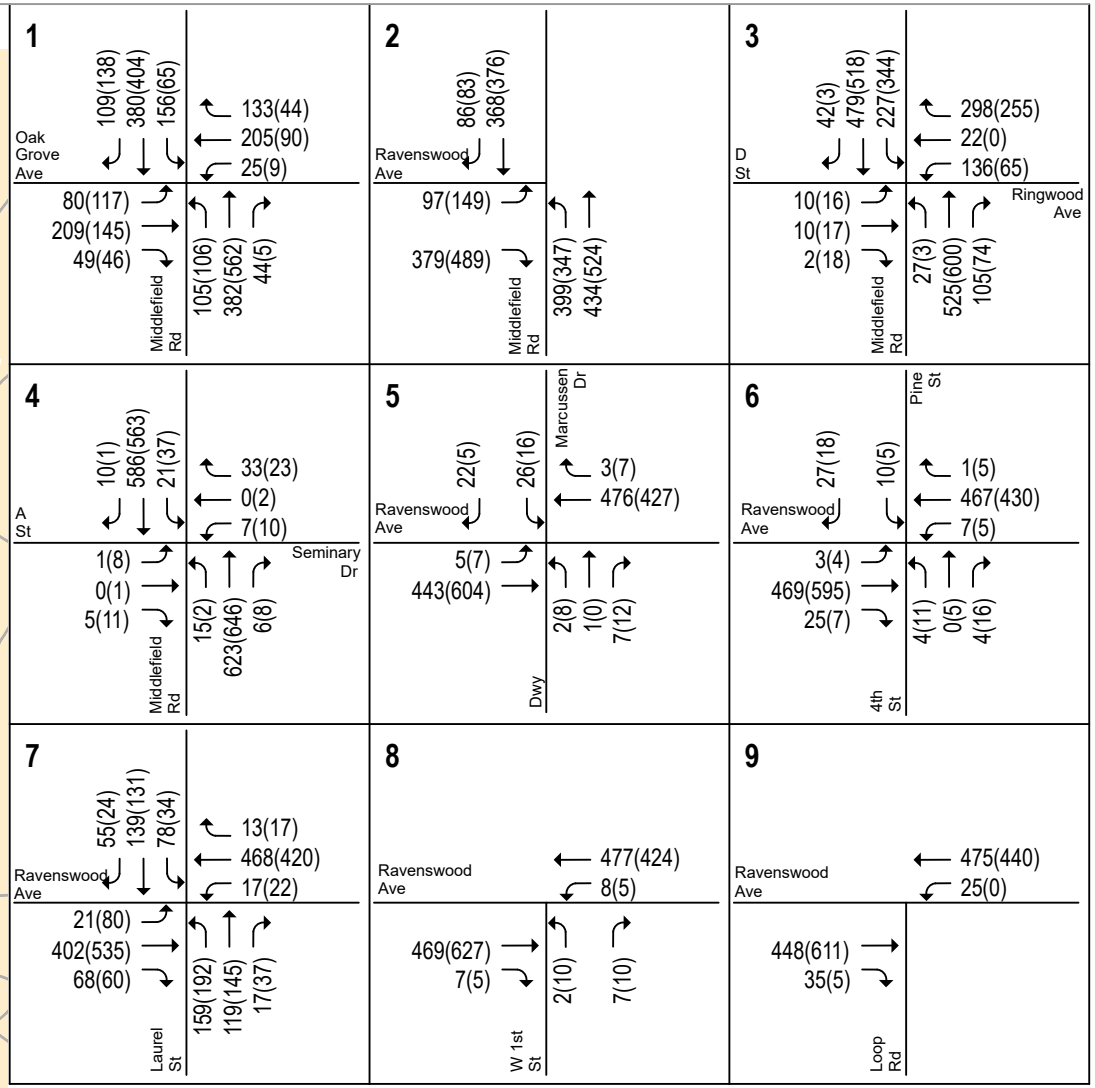


Figure 4
Background Traffic Volumes

NORTH
Not to Scale

Table 5
Background Conditions Level of Service Analysis

#	Intersection	Control	Peak Hour	Existing Conditions Avg. Delay [1]	Existing Conditions LOS	Background Conditions Avg. Delay [1]	Background Conditions LOS
1	Middlefield Rd & Oak Grove Ave	Signal	AM	40.1	D	40.0	D
			PM	31.2	C	37.0	D
2	Middlefield Rd & Ravenswood Ave	Signal	AM	39.0	D	34.9	C
			PM	30.0	C	31.5	C
3	Middlefield Rd & Ringwood Ave	Signal	AM	34.5	C	32.4	C
			PM	28.0	C	27.1	C
4	Middlefield Rd & Seminary Dr	TWSC	AM	9.9	A	9.8	A
			PM	12.1	B	11.8	B
5	Marcussen Dr & Ravenswood Ave	TWSC	AM	22.7	C	11.6	B
			PM	13.9	B	13.6	B
6	Pine St & Ravenswood Ave	TWSC	AM	17.3	C	18.9	C
			PM	23.5	C	30.4	D
7	Laurel St & Ravenswood Ave	Signal	AM	30.2	C	33.8	C
			PM	47.9	D	49.4	D
8	W 1st St & Ravenswood Ave	OWSC	AM	15.6	C	5.4	A
			PM	14.7	B	14.1	B
9	Loop Rd & Ravenswood Ave	OWSC	AM	5.1	A	5.0	A
			PM	0.0	A	0.0	A

Notes:
Avg Delay = Average Delay in seconds; LOS = Level of Service; TWSC = Two Way Stop Control; OWSC = One Way Stop Control

[1] At signalized intersections, delay shown is the weighted average delay for all vehicles entering the intersection calculated using the calibrated SimTraffic model. At unsignalized intersections, the delay is shown for the worst stop controlled approach or uncontrolled left-turn movement, whichever is greater.

Background Conditions Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis. The queues (measured in feet per lane) were calculated by the microscopic simulation model. Table 6 shows the 95th percentile and average queues at all intersection movements during the AM and PM peak hour periods under background conditions.

Table 6
Background Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Background Conditions 95th Percentile Queue (ft/ln)[1]	Background Conditions Average Queue (ft/ln)[2]
1	Middlefield Rd & Oak Grove Ave	EBL	AM	245	157	75
			PM		138	70
		EBTR	AM	425	253	144
			PM		181	100
		WBL	AM	45	**62**	21
			PM		34	0
		WBTR	AM	130	**328**	**195**
			PM		**151**	73
		NBL	AM	130	**173**	88
			PM		**167**	88
		NBTR	AM	985	473	287
			PM		471	260
		SBL	AM	150	**192**	106
			PM		145	60
		SBTR	AM	1000	652	330
			PM		677	385
2	Middlefield Rd & Ravenswood Ave	EBL	AM	355	309	127
			PM		**383**	182
		EBR	AM	125	**209**	79
			PM		**228**	95
		NBL	AM	435	**460**	313
			PM		366	246
		NBT	AM	435	223	50
			PM		179	79
		SBTR	AM	985	697	276
			PM		498	341

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 6 (continued)
Background Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Background Conditions 95th Percentile Queue (ft/ln)[1]	Background Conditions Average Queue (ft/ln)[2]
3	Middlefield Rd & Ringwood Ave/Project Driveway	EBL	AM	145	42	0
			PM		42	0
		EBTR	AM	145	35	0
			PM		61	24
		WBLT	AM	250	186	108
			PM		94	46
		WBR	AM	250	192	107
			PM		156	87
		NBL	AM	200	95	31
			PM		26	0
		NBT1	AM	885	292	139
			PM		273	124
		NBT2	AM	885	389	223
			PM		409	240
		NBR	AM	150	**180**	76
			PM		**156**	55
		SBL	AM	160	**206**	149
			PM		**194**	**166**
		SBT	AM	450	389	209
			PM		419	241
		SBTR	AM	320	**411**	128
			PM		**379**	126
4	Middlefield Rd & Seminary Dr/Project Driveway	EBLTR	AM	250	27	0
			PM		41	0
		WBLTR	AM	250	49	22
			PM		42	19
		NBL	AM	65	26	0
			PM		0	0
		NBT	AM	360	0	0
			PM		0	0
		NBR	AM	105	0	0
			PM		0	0
		SBL	AM	100	34	0
			PM		38	0
		SBTR	AM	885	0	0
			PM		63	0

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 6 (continued)
Background Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Background Conditions 95th Percentile Queue (ft/ln)[1]	Background Conditions Average Queue (ft/ln)[2]
5	Marcussen Dr & Ravenswood Ave	EBLTR	AM	730	79	0
			PM		62	0
		WBLTR	AM	760	0	0
			PM		15	0
		NBL	AM	135	0	0
			PM		27	0
		NBTR	AM	135	31	0
			PM		37	0
		SBLTR	AM	985	57	28
			PM		42	17
6	Pine St/Project Driveway & Ravenswood Ave	EBLTR	AM	210	39	0
			PM		56	0
		WBLTR	AM	730	186	64
			PM		290	105
		NBLT	AM	230	17	0
			PM		44	0
		NBR	AM	230	20	0
			PM		35	0
		SBLTR	AM	1000	70	28
			PM		47	18
7	Laurel St & Ravenswood Ave	EBL	AM	125	57	17
			PM		115	56
		EBTR	AM	365	**669**	297
			PM		**1071**	**575**
		WBL	AM	100	54	16
			PM		67	23
		WBTR	AM	220	**306**	190
			PM		**304**	211
		NBL	AM	115	**139**	94
			PM		**145**	101
		NBTR	AM	1250	292	126
			PM		434	243
		SBL	AM	130	**139**	68
			PM		119	43
		SBTR	AM	480	221	130
			PM		257	158

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 6 (continued)
Background Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Existing Storage Length (ft/ln)	Background Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
8	W 1st St/Project Driveway & Ravenswood Ave	EBTR	AM	365	97	0
			PM		91	15
		WBLT	AM	365	64	0
			PM		31	0
		NBLR	AM	255	28	0
			PM		46	18
9	Loop Rd/Project Driveway & Ravenswood Ave	EBTR	AM	525	50	0
			PM		0	0
		WBLT	AM	175	93	21
			PM		19	0

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.

The results of the queuing analysis show that all lanes that currently have 95th percentile queues extend beyond the storage capacity under existing conditions would continue to have queues exceed the storage capacity under background conditions.

Background Plus Project Conditions

Under background plus project conditions, access to the proposed project site would be provided via two driveways along Middlefield Road and three driveways along Ravenswood Avenue. The project driveways were analyzed with the following characteristics. The project lane configurations are shown on Figure 5.

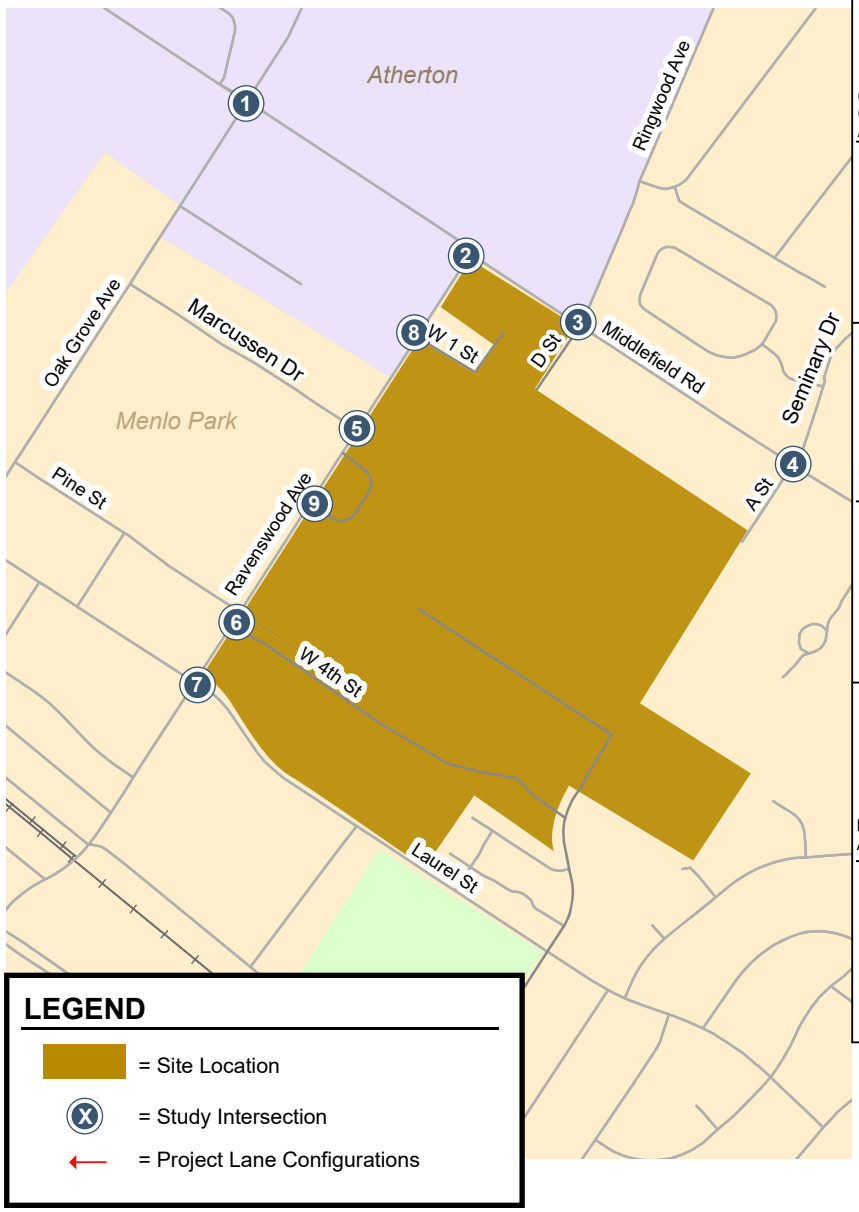
- Middlefield Road & Ringwood Avenue – The project driveway is proposed to be the west leg of the signalized intersection. The project driveway approach would have one shared left-through lane and one right-turn lane. The lane configurations for the other approaches would remain the same. The signal was analyzed with the existing timing and phasing (permitted left turns for eastbound and westbound approaches on Ringwood Avenue).
- Middlefield Road & Seminary Drive – The project driveway is proposed to be the west leg of the unsignalized intersection as a stop-controlled approach. The project driveway approach would have one shared left-through lane and one right-turn lane. The lane configurations for the other approaches would remain the same.
- Pine Street & Ravenswood Avenue – The project driveway is proposed to be the south leg of the unsignalized intersection as a stop-controlled approach. The project driveway

approach would have one shared left-through-right lane. The lane configurations for the other approaches would remain the same.

- W 1st Street & Ravenswood Avenue – The project driveway is proposed to be the south leg of the unsignalized intersection as a stop-controlled approach. The project driveway approach would have one right-turn lane and would be restricted to right-in-right-out only movements.
- Loop Road & Ravenswood Avenue – The project driveway is proposed to be the south leg of the unsignalized intersection as a stop-controlled approach. The project driveway approach would have one left-turn lane and one right-turn lane. The lane configurations for the other approaches would remain the same.

Intersection Turning Movements Volumes

Background plus project conditions reflect the projected traffic volumes with the completion of the project and future developments. Project-generated traffic was added to the background condition traffic volumes. The background plus project traffic volumes are shown on Figure 6.



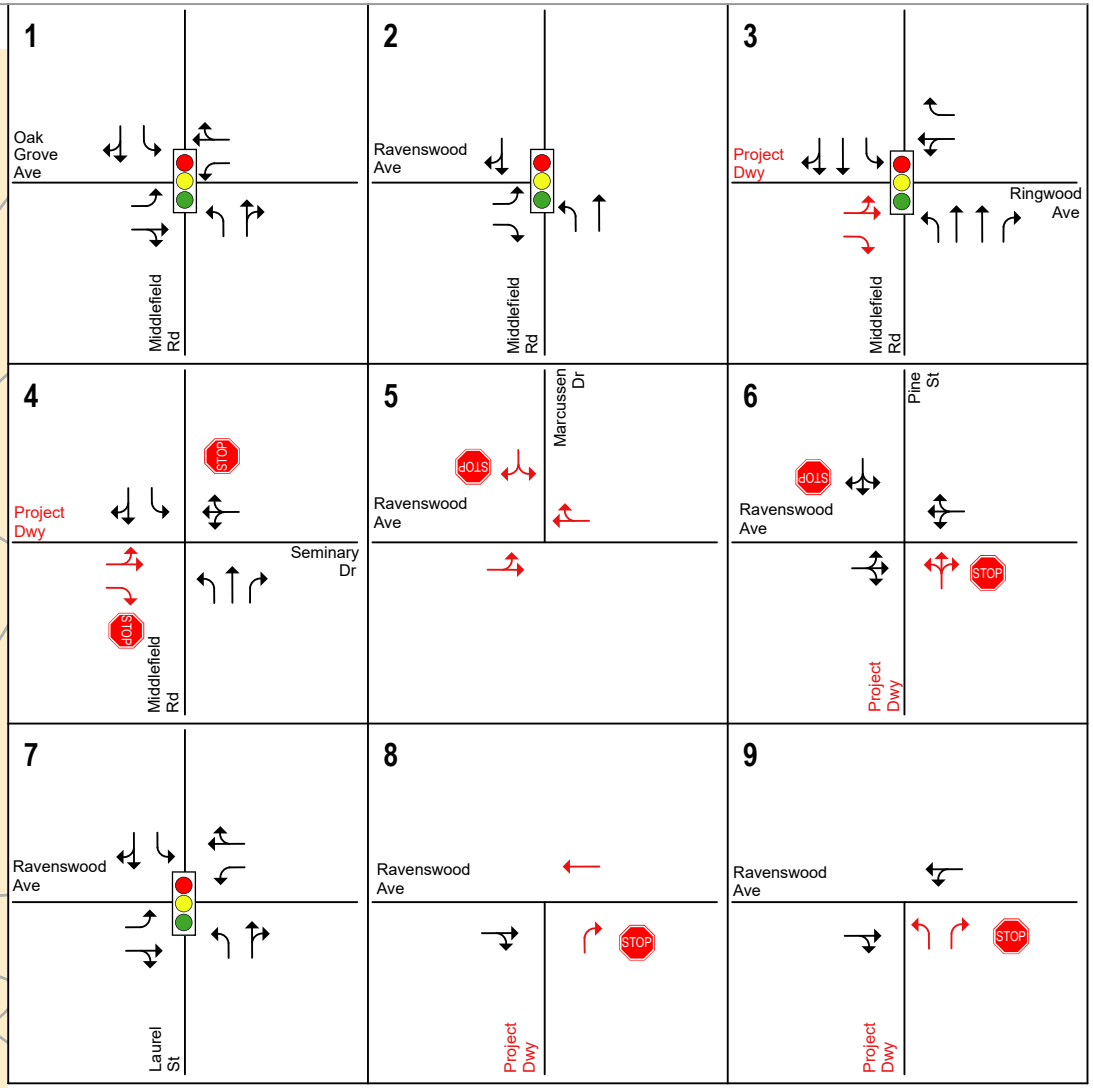
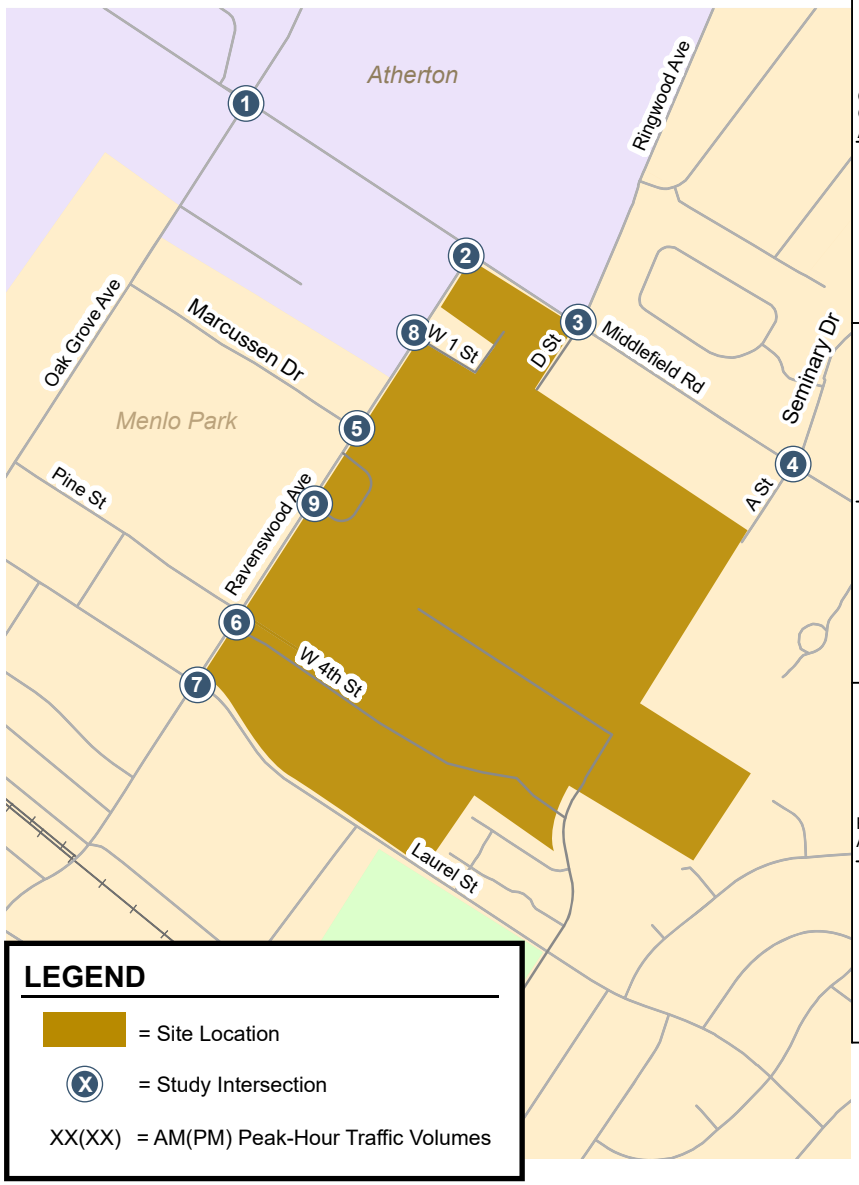


Figure 5
Project Lane Configurations

NORTH
Not to Scale



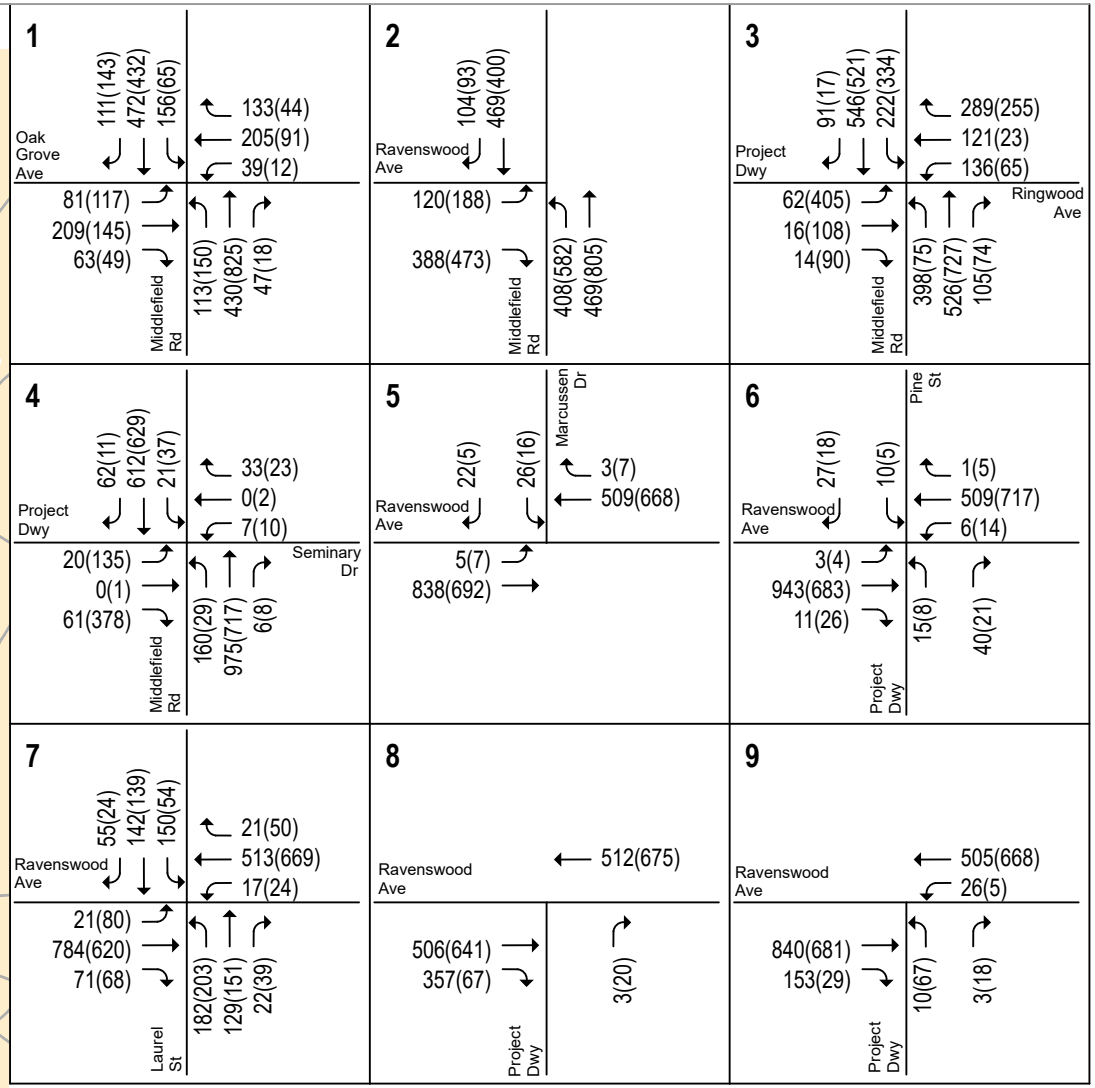


Figure 6
Background Plus Project Traffic Volumes

NORTH
Not to Scale

Background Plus Project Conditions Level of Service Analysis

Table 7 shows the average delay and the corresponding LOS during the AM and PM peak hour periods under background plus project conditions. The results show that six study intersections would operate at unacceptable conditions during at least one of the peak hours under background plus project conditions.

Table 7
Background Plus Project Conditions Level of Service Analysis

#	Intersection	Control	Peak Hour	Background Conditions		Background + Project Conditions	
				Avg. Delay [1]	LOS	Avg. Delay [1]	LOS
1	Middlefield Rd & Oak Grove Ave	Signal	AM	40.0	D	**103.5**	**F**
			PM	37.0	D	**79.6**	**E**
2	Middlefield Rd & Ravenswood Ave	Signal	AM	34.9	C	**80.4**	**F**
			PM	31.5	C	**59.2**	**E**
3	Middlefield Rd & Ringwood Ave/Project Dwy	Signal	AM	32.4	C	**60.5**	**E**
			PM	27.1	C	**OVR**	**F**
4	Middlefield Rd & Seminary Dr/Project Dwy	TWSC	AM	9.8	A	**OVR**	**F**
			PM	11.8	B	**OVR**	**F**
5	Marcussen Dr & Ravenswood Ave	TWSC	AM	11.6	B	14.4	B
			PM	13.6	B	27.2	D
6	Pine St/Project Dwy & Ravenswood Ave	TWSC	AM	18.9	C	24.2	C
			PM	30.4	D	**OVR**	**F**
7	Laurel St & Ravenswood Ave	Signal	AM	33.8	C	44.6	D
			PM	49.4	D	52.4	D
8	W 1st St/Projecy Dwy & Ravenswood Ave	OWSC	AM	5.4	A	7.2	A
			PM	14.1	B	11.4	B
9	Loop Rd/Project Dwy & Ravenswood Ave	OWSC	AM	5.0	A	26.3	D
			PM	0.0	A	**58.9**	**F**

Notes:

Avg Delay = Average Delay in seconds; LOS = Level of Service; TWSC = Two Way Stop Control; OWSC = One Way Stop Control; OVR = Delay exceeds 120 seconds

[1] At signalized intersections, delay shown is the weighted average delay for all vehicles entering the intersection calculated using the calibrated SimTraffic model. At unsignalized intersections, the delay is shown for the worst stop controlled approach or uncontrolled left-turn movement, whichever is greater.

Bold indicates LOS "E" or "F".

Background Plus Project Conditions Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis. The queues (measured in feet per lane) were calculated by the microscopic simulation model. Table 8 shows the 95th percentile and average queues at all intersection movements during the AM and PM peak hour periods under background plus project conditions.

Table 8
Background Plus Project Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
1	Middlefield Rd & Oak Grove Ave	EBL	AM	245	189	80
			PM		134	69
		EBTR	AM	425	332	174
			PM		185	108
		WBL	AM	45	**72**	31
			PM		44	0
		WBTR	AM	130	**431**	**230**
			PM		**145**	74
		NBL	AM	130	95	40
			PM		**179**	109
		NBTR	AM	985	204	100
			PM		**1273**	871
		SBL	AM	150	**213**	112
			PM		**162**	72
		SBTR	AM	1000	**2416**	**1255**
			PM		**1088**	576
2	Middlefield Rd & Ravenswood Ave	EBL	AM	355	236	104
			PM		**367**	193
		EBR	AM	125	**200**	75
			PM		**238**	114
		NBL	AM	435	308	192
			PM		**501**	409
		NBT	AM	435	105	42
			PM		**532**	307
		SBTR	AM	985	**1262**	901
			PM		894	555

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 8 (continued)
Background Plus Project Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project Conditions: 95th Percentile Queue (ft/ln)[1]	Background Plus Project Conditions: Average Queue (ft/ln)[2]
3	Middlefield Rd & Ringwood Ave/Project Driveway	EBLT	AM	145	**303**	111
			PM		**1627**	**1614**
		EBR	AM	145	33	0
			PM		**1635**	**1612**
		WBLT	AM	250	**262**	170
			PM		116	60
		WBR	AM	250	128	71
			PM		**273**	147
		NBL	AM	200	**202**	199
			PM		**250**	145
		NBT1	AM	885	**1048**	**972**
			PM		**1079**	532
		NBT2	AM	885	578	222
			PM		**933**	529
		NBR	AM	150	0	0
			PM		**176**	62
		SBL	AM	160	**204**	142
			PM		**198**	**162**
		SBT	AM	450	348	204
			PM		406	223
		SBTR	AM	320	**321**	103
			PM		**355**	124
4	Middlefield Rd & Seminary Dr/Project Driveway	EBLT	AM	250	**1835**	**1031**
			PM		**1931**	**956**
		EBR	AM	90	48	0
			PM		**163**	**96**
		WBLTR	AM	250	**1158**	**731**
			PM		141	44
		NBL	AM	65	**90**	33
			PM		44	0
		NBT	AM	360	**2410**	**2394**
			PM		**606**	131
		NBR	AM	105	24	0
			PM		32	0
		SBL	AM	100	50	17
			PM		62	22
		SBTR	AM	885	26	0
			PM		257	25

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 8 (continued)
Background Plus Project Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
5	Marcussen Dr & Ravenswood Ave	EBLT	AM	730	47	0
			PM		73	0
		WBTR	AM	760	28	0
			PM		103	0
		SBLR	AM	985	62	30
			PM		45	18
6	Pine St/Project Driveway & Ravenswood Ave	EBLTR	AM	210	27	0
			PM		104	15
		WBLTR	AM	730	146	44
			PM		573	334
		NBLTR	AM	230	77	34
			PM		146	47
		SBLTR	AM	1000	59	24
			PM		85	29
7	Laurel St & Ravenswood Ave	EBL	AM	125	64	16
			PM		120	67
		EBTR	AM	365	**1031**	**739**
			PM		**1261**	**765**
		WBL	AM	100	61	19
			PM		58	19
		WBTR	AM	220	**296**	173
			PM		**297**	**229**
		NBL	AM	115	**143**	98
			PM		**145**	101
		NBTR	AM	1250	339	161
			PM		491	290
		SBL	AM	130	**159**	101
			PM		**137**	61
		SBTR	AM	480	285	152
			PM		280	159

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 8 (continued)
Background Plus Project Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project Conditions 95th Percentile Queue (ft/ln)[1]	Background Plus Project Conditions Average Queue (ft/ln)[2]
8	W 1st St/Project Driveway & Ravenswood Ave	EBTR	AM	365	48	0
			PM		69	0
		WBT	AM	365	0	0
			PM		33	0
		NBR	AM	255	18	0
			PM		41	15
9	Loop Rd/Project Driveway & Ravenswood Ave	EBTR	AM	525	15	0
			PM		18	0
		WBLT	AM	175	157	45
			PM		156	38
		NBL	AM	70	34	0
			PM		**186**	65
		NBR	AM	70	18	0
			PM		39	0

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Project Effects

The results of the level of service and queuing analyses show that the following intersections would operate at unacceptable conditions during at least one of the peak hours under background plus project conditions as described below.

Middlefield Road & Oak Grove Avenue

During the AM peak hour, the analysis shows that this intersection would operate at an unacceptable LOS F under background plus project conditions. The simulation shows that the 95th percentile queues would be longer for most lanes compared to background conditions. Queues would be particularly long for the westbound through/right and southbound through/right movements. The analysis shows shorter queue lengths for the northbound lanes under project conditions due to traffic being metered at upstream intersections. For example, at the Middlefield Road and Ringwood Avenue intersection, the analysis shows that the northbound left-turning traffic would spill out of the turn pocket and extend into the adjacent through lane, thus affecting the throughput on northbound Middlefield Road.

During the PM peak hour, the analysis shows that this intersection would operate at an unacceptable LOS E under background plus project conditions and queues would be particularly

long for the northbound and southbound approaches on Middlefield Road compared to background no project conditions.

Middlefield Road & Ravenswood Avenue

During the AM peak hour, the analysis shows that this intersection would operate at LOS F under background plus project conditions. Queues would be significantly long for the southbound approach on Middlefield Road.

During the PM peak hour, the analysis shows that this intersection would operate at an LOS E under background plus project conditions. The simulation shows that the 95th percentile queues would be longer for northbound and southbound approaches on Middlefield Road compared to background conditions.

Middlefield Road & Ringwood Avenue

During the AM peak hour, the analysis shows that this intersection would operate at LOS E under background plus project conditions and the 95th percentile queues for the northbound left-turn, westbound left-turn and southbound left-turn movements would exceed their storage capacities. The project would add approximately 400 vehicles during the AM peak hour to the northbound left-turn movement and the analysis shows that only 27% of the left-turning traffic could be served during the AM peak hour with the current signal timing and phasing.

During the PM peak hour, the analysis shows that this intersection would operate at LOS F and the 95th percentile queue for the northbound left-turn, northbound through, southbound left-turn and westbound right-turn would exceed their storage capacities. The project would add approximately 550 vehicles to the eastbound approach and the analysis shows that only 40% of the eastbound traffic could be served during the PM peak hour with the current signal timing and phasing.

Middlefield Road & Seminary Drive

During the AM and PM peak hours, this intersection would operate at LOS F under background plus project conditions. The simulation analysis shows that the northbound vehicular queue at the downstream intersection of Middlefield and Ringwood Avenue would extend beyond Seminary Drive resulting in long delays for traffic on the minor street approaches.

Pine Street/Project Driveway and Ravenswood

During the PM peak hour, this intersection would operate at LOS F under background plus project conditions based on the delay experienced by traffic on the minor street approaches. Due to increased traffic levels on Ravenswood Avenue, traffic on Pine Street and the project driveway would experience long delays in finding gaps to turn onto Ravenswood Avenue.

Loop Road/Project Driveway and Ravenswood

During the PM peak hour, this intersection would operate at LOS F under background plus project conditions based on the delay experienced by traffic exiting the project site. Due to increased traffic levels on Ravenswood Avenue, traffic on the project driveway would experience long delays in finding gaps to turn onto Ravenswood Avenue.

Background Plus Project (With Improvements) Conditions

The following improvements were identified to improve traffic operations along Middlefield Road and Ravenswood Avenue:

- A new traffic signal at Middlefield Road & Seminary Drive with protected north/south phasing and split east/west phasing and optimized cycle length. Split phasing was used in favor of permitted phasing due to the lack of space for opposing left-turning vehicles to travel simultaneously and to reduce delays to the left-turning traffic.
- Extension of the northbound left-turn storage length at Middlefield Road & Seminary Drive from 50 feet to 325 feet.
- Adding forced-turn islands on the east and west approaches of the Middlefield Road & Seminary Drive intersection to eliminate through movements and prevent future cut-through traffic on Seminary Drive.
- Changing the east/west phasing at Middlefield Road & Ringwood Avenue from permitted to split phasing and modifying the signal timings at Middlefield & Ravenswood Avenue. The analysis assumed half cycle length at the Middlefield/Ravenswood intersection during the PM peak hour.
- Adding a center median with left-turn pockets or two-way left-turn lane along Ravenswood Avenue between the proposed project driveway at W 1st Street and Laurel Street.

Background Plus Project (With Improvements) Conditions Level of Service Analysis

Table 9 shows the average delay and the corresponding LOS during the AM and PM peak hour periods under background plus project conditions with the identified improvements listed above. The results show that implementation of these improvements would result in acceptable levels of service during one of the peak hours at four of the six intersections that would operate at unacceptable levels with the project traffic. However, the following intersections would continue to operate at LOS E or LOS F during at least one of the peak hours.

- Middlefield Road & Oak Grove Avenue (AM)
- Middlefield Road & Ravenswood Avenue (AM)
- Middlefield Road & Ringwood Avenue (AM & PM)
- Middlefield Road & Seminary Drive (AM)
- Pine Street & Ravenswood Avenue (AM & PM)

Background Plus Project (With Improvements) Conditions Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis. The queues (measured in feet per lane) were calculated by the microscopic simulation model. Table 10 shows the 95th percentile and average queues at all intersection movements during the AM and PM peak hour periods under background plus project (with improvements) conditions.

Table 9
Background Plus Project (With Improvements) Conditions Level of Service Analysis

#	Intersection	Control	Peak Hour	Background + Project Conditions Avg. Delay [1]	Background + Project Conditions LOS	Background + Project With Improvements Avg. Delay [1]	Background + Project With Improvements LOS
1	Middlefield Rd & Oak Grove Ave	Signal	AM	**103.5**	**F**	**101.3**	**F**
			PM	**79.6**	**E**	29.2	C
2	Middlefield Rd & Ravenswood Ave	Signal	AM	**80.4**	**F**	**57.5**	**E**
			PM	**59.2**	**E**	31.8	C
3	Middlefield Rd & Ringwood Ave	Signal	AM	**60.5**	**E**	**71.6**	**E**
			PM	**OVR**	**F**	**OVR**	**F**
4	Middlefield Rd & Seminary Dr	TWSC	AM	**OVR**	**F**	-	-
			PM	**OVR**	**F**	-	-
	Mitigation	*Signal*	*AM*	-	-	***63.2***	***E***
			PM	-	-	*49.2*	*D*
5	Marcussen Dr & Ravenswood Ave	TWSC	AM	14.4	B	14.9	B
			PM	27.2	D	24.0	C
6	Pine St & Ravenswood Ave	TWSC	AM	24.2	C	**39.8**	**E**
			PM	**OVR**	**F**	**58.1**	**F**
7	Laurel St & Ravenswood Ave	Signal	AM	44.6	D	38.7	D
			PM	52.4	D	46.6	D
8	W 1st St & Ravenswood Ave	OWSC	AM	7.2	A	8.1	A
			PM	11.4	B	21.5	C
9	Loop Rd & Ravenswood Ave	OWSC	AM	26.3	D	16.9	C
			PM	**58.9**	**F**	30.5	D

Notes:
Avg Delay = Average Delay in seconds; LOS = Level of Service; TWSC = Two Way Stop Control; OWSC = One Way Stop Control; OVR = Delay exceeds 120 seconds

[1] At signalized intersections, delay shown is the weighted average delay for all vehicles entering the intersection calculated using the calibrated SimTraffic model. At unsignalized intersections, the delay is shown for the worst stop controlled approach or uncontrolled left-turn movement, whichever is greater.

Bold indicates LOS "E" or "F".

Table 10
Background Plus Project (With Improvements) Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project (With Improvements) Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
1	Middlefield Rd & Oak Grove Ave	EBL	AM	245	223	96
			PM		182	99
		EBTR	AM	425	**666**	252
			PM		255	148
		WBL	AM	45	**77**	35
			PM		**52**	17
		WBTR	AM	130	**836**	**341**
			PM		**171**	94
		NBL	AM	130	**176**	97
			PM		**163**	83
		NBTR	AM	985	462	259
			PM		674	334
		SBL	AM	150	**201**	113
			PM		135	53
		SBTR	AM	1000	**2304**	**1128**
			PM		371	214
2	Middlefield Rd & Ravenswood Ave	EBL	AM	355	345	160
			PM		**449**	242
		EBR	AM	125	**223**	97
			PM		**243**	**129**
		NBL	AM	435	434	297
			PM		**455**	288
		NBT	AM	435	111	22
			PM		421	191
		SBTR	AM	985	**1194**	670
			PM		693	362

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 10 (continued)
Background Plus Project (With Improvements) Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project (With Improvements) Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
3	Middlefield Rd & Ringwood Ave/Project Driveway	EBLT	AM	145	**203**	77
			PM		**1649**	**1632**
		EBR	AM	145	33	0
			PM		**1643**	**1629**
		WBLT	AM	250	**284**	197
			PM		172	88
		WBR	AM	250	186	102
			PM		244	136
		NBL	AM	200	**239**	185
			PM		187	75
		NBT1	AM	885	**1194**	716
			PM		730	363
		NBT2	AM	885	**930**	678
			PM		733	449
		NBR	AM	150	**198**	91
			PM		**191**	72
		SBL	AM	160	**222**	157
			PM		**189**	**168**
		SBT	AM	450	**507**	386
			PM		450	319
		SBTR	AM	320	**621**	**394**
			PM		**597**	315
4	Middlefield Rd & Seminary Dr/Project Driveway	EBLT	AM	250	**285**	69
			PM		**811**	309
		EBR	AM	90	89	36
			PM		**133**	**109**
		WBLTR	AM	250	83	33
			PM		50	19
		NBL	AM	65	**413**	**271**
			PM		**292**	**95**
		NBT	AM	360	**2274**	**900**
			PM		**985**	**531**
		NBR	AM	105	32	0
			PM		44	0
		SBL	AM	100	68	24
			PM		91	41
		SBTR	AM	885	727	327
			PM		**982**	496

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 10 (continued)
Background Plus Project (With Improvements) Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project (With Improvements) Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
5	Marcussen Dr & Ravenswood Ave	EBL	AM	730	0	0
			PM		18	0
		EBT	AM	730	81	0
			PM		138	24
		WBTR	AM	760	18	0
			PM		40	0
		SBLR	AM	985	62	29
			PM		48	18
6	Pine St/Project Driveway & Ravenswood Ave	EBL	AM	210	0	0
			PM		16	0
		EBTR	AM	210	40	0
			PM		0	0
		WBL	AM	730	27	0
			PM		35	0
		WBTR	AM	730	297	109
			PM		535	262
		NBLTR	AM	230	72	36
			PM		54	23
		SBLTR	AM	1000	82	30
			PM		64	23
7	Laurel St & Ravenswood Ave	EBL	AM	125	66	18
			PM		**126**	67
		EBTR	AM	365	**777**	**445**
			PM		**1006**	**503**
		WBL	AM	100	65	20
			PM		63	21
		WBTR	AM	220	**312**	213
			PM		**294**	**231**
		NBL	AM	115	**142**	96
			PM		**149**	103
		NBTR	AM	1250	365	168
			PM		594	333
		SBL	AM	130	**159**	100
			PM		**145**	68
		SBTR	AM	480	278	149
			PM		334	187

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 10 (continued)
Background Plus Project (With Improvements) Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Project (With Improvements) Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
8	W 1st St/Project Driveway & Ravenswood Ave	EBTR	AM	365	138	21
			PM		233	55
		NBR	AM	255	16	0
			PM		42	16
9	Loop Rd/Project Driveway & Ravenswood Ave	EBTR	AM	525	100	0
			PM		116	0
		WBL	AM	175	45	16
			PM		18	0
		WBT	AM	1175	38	0
			PM		88	0
		NBL	AM	70	33	0
			PM		**92**	46
		NBR	AM	70	15	0
			PM		38	0

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Effects of Identified Improvements

A comparison of the percentage of traffic served at each intersection under existing, background, background plus project and background plus project (with improvements) for AM and PM peak hour scenarios based on the simulation analysis is shown in Table 11. The effects of the identified improvements on the traffic operations at each of the study intersections are also discussed below.

Table 11
Percentage of Traffic Served – Project Conditions

#	Intersection	Percentage of Traffic Served				
		Existing	Background	Background Plus Project	Background Plus Project (with Improvements)	Increased Difference (With Improvements)
1	Middlefield Rd & Oak Grove Ave	100%	100%	83%	97%	14%
		99%	100%	92%	95%	3%
2	Middlefield Rd & Ravenswood Ave	100%	100%	74%	94%	20%
		100%	100%	90%	93%	3%
3	Middlefield Rd & Ringwood Ave	100%	100%	65%	96%	31%
		100%	100%	86%	91%	5%
4	Middlefield Rd & Seminary Dr	100%	100%	45%	97%	52%
		100%	99%	92%	99%	7%
5	Marcussen Dr & Ravenswood Ave	100%	100%	85%	88%	3%
		99%	100%	93%	95%	2%
6	Pine St & Ravenswood Ave	100%	100%	85%	87%	2%
		99%	100%	94%	96%	2%
7	Laurel St & Ravenswood Ave	100%	100%	89%	89%	0%
		100%	100%	95%	97%	2%
8	W 1st St & Ravenswood Ave	100%	100%	85%	90%	5%
		99%	100%	93%	95%	2%
9	Loop Rd & Ravenswood Ave	100%	100%	85%	87%	2%
		99%	100%	94%	96%	2%

Middlefield Road & Oak Grove Avenue

During the AM peak hour, the analysis shows that with the identified improvements, the Middlefield Road & Oak Grove Avenue intersection would continue to operate at LOS F but with a lower delay. The queuing analysis shows longer vehicular queues for the eastbound and westbound approaches on Oak Grove Avenue and a shorter queue for the southbound approach on Middlefield Road. The percentage of traffic served under background plus project conditions would improve from 83% to 97% with improvements.

During the PM peak hour, the analysis shows that the identified improvements would reduce the intersection delay and improve the LOS from E to a C. The queuing analysis shows shorter northbound and southbound queues on Middlefield Road with the proposed improvements. The percentage of traffic served under background plus project conditions would improve from 92% to 95% with improvements.

Middlefield Road & Ravenswood Avenue

During the AM peak hour, the analysis shows that the identified improvements would reduce the delay at the Middlefield Road & Ravenswood Avenue intersection and improve the LOS from F to

an E. The percentage of traffic served under background plus project conditions would improve from 74% to 94% with improvements.

During the PM peak hour, the analysis shows that the identified improvements would reduce the intersection delay and improve the LOS from E to a C. The percentage of traffic served under background plus project conditions would improve from 90% to 93% with improvements.

Middlefield Road & Ringwood Avenue

At the Middlefield Road & Ringwood Avenue intersection, the project would add approximately 400 vehicles to the northbound left-turn during the AM peak hour and approximately 550 vehicles to the eastbound approach during the PM peak hour. With a new traffic signal identified as a potential improvement at the intersection of Middlefield Road & Seminary Drive, which also provides access to the project, it was assumed that 50% of the project traffic would use the Ringwood Avenue traffic signal and 50% would use the Seminary Drive traffic signal. The improvements also assume that split phasing would be implemented for the eastbound and westbound approaches on Ringwood Avenue.

During the AM peak hour, the analysis shows that with the identified improvements, the intersection would continue to operate at LOS E. The percentage of traffic served under background plus project conditions would improve from 65% to 96% with improvements.

During the PM peak hour, the analysis shows that with the identified improvements, the intersection would continue to operate at LOS F. The queuing analysis shows shorter queues on northbound Middlefield Road and longer queues on southbound Middlefield Road. Overall, the percentage of traffic served under background plus project conditions would improve from 86% to 91% with improvements.

Middlefield Road & Seminary Drive

During the AM peak hour, the analysis shows that with a traffic signal at Middlefield Road & Seminary Drive, the average intersection delay would decrease, and the LOS would improve from F to an E. The queuing analysis shows a significant reduction in vehicular queues for the eastbound and westbound approaches and a longer queue for the southbound approach. The percentage of traffic served under background plus project conditions would improve from 45% to 97% with improvements.

During the PM peak hour, the analysis shows that the identified improvements would reduce the intersection delay, and the LOS would improve from F to a D. The queuing analysis shows a significantly shorter queue for the eastbound approach (project driveway) as vehicles can exit onto Middlefield Road with a traffic signal and longer queues for the northbound and southbound approaches on Middlefield Road as traffic would have to stop due to the traffic signal. Overall, the percentage of traffic served under background plus project conditions would improve from 92% to 99% with improvements.

Marcussen Drive & Ravenswood Avenue

The intersection of Marcussen Drive and Ravenswood Avenue would continue to operate at acceptable LOS C or better during both the AM and PM peak hours. The percentage of traffic served under background plus project conditions with improvements would increase from 85% to 88% and from 93% to 95% during the AM and PM peak hours, respectively.

Pine Street/Project Driveway & Ravenswood Avenue

During the AM peak hour, the analysis shows that with the identified improvements, including exclusive eastbound and westbound left-turn lanes on Ravenswood Avenue, vehicles on southbound Pine Street would experience longer delays (LOS E) due to the improved traffic throughput on Ravenswood Avenue. The percentage of traffic served under background plus project conditions would improve from 85% to 87% with improvements.

During the PM peak hour, the analysis shows that with the identified improvements, the intersection would continue to operate at LOS F. The percentage of traffic served under background plus project conditions would improve from 94% to 96% with improvements.

Laurel Street & Ravenswood Avenue

The analysis shows that with the identified improvements, the intersection of Laurel Street and Ravenswood Avenue would continue to operate at LOS D during the AM and PM peak hours. During the PM peak hour, the percentage of traffic served under background plus project conditions would improve from 95% to 97% with improvements.

W 1st Street/Project Driveway & Ravenswood Avenue

The intersection of W 1st Street/Project Driveway and Ravenswood Avenue would continue to operate at acceptable LOS C or better during both the AM and PM peak hours with the identified improvements. The percentage of traffic served under background plus project conditions with improvements would increase from 85% to 90% and from 93% to 95% during the AM and PM peak hours, respectively.

Loop Road/Project Driveway & Ravenswood Avenue

During the AM peak hour, the analysis shows that with the identified improvements, including an exclusive westbound left-turn lane on Ravenswood Avenue, the LOS would improve from D to a C. The percentage of traffic served under background plus project conditions would improve from 85% to 87% with improvements.

During the PM peak hour, the analysis shows that the identified improvements would reduce the intersection delay and the LOS would improve from F to a D. Overall, the percentage of traffic served under background plus project conditions would improve from 94% to 96% with improvements.

Background Plus Variant Conditions

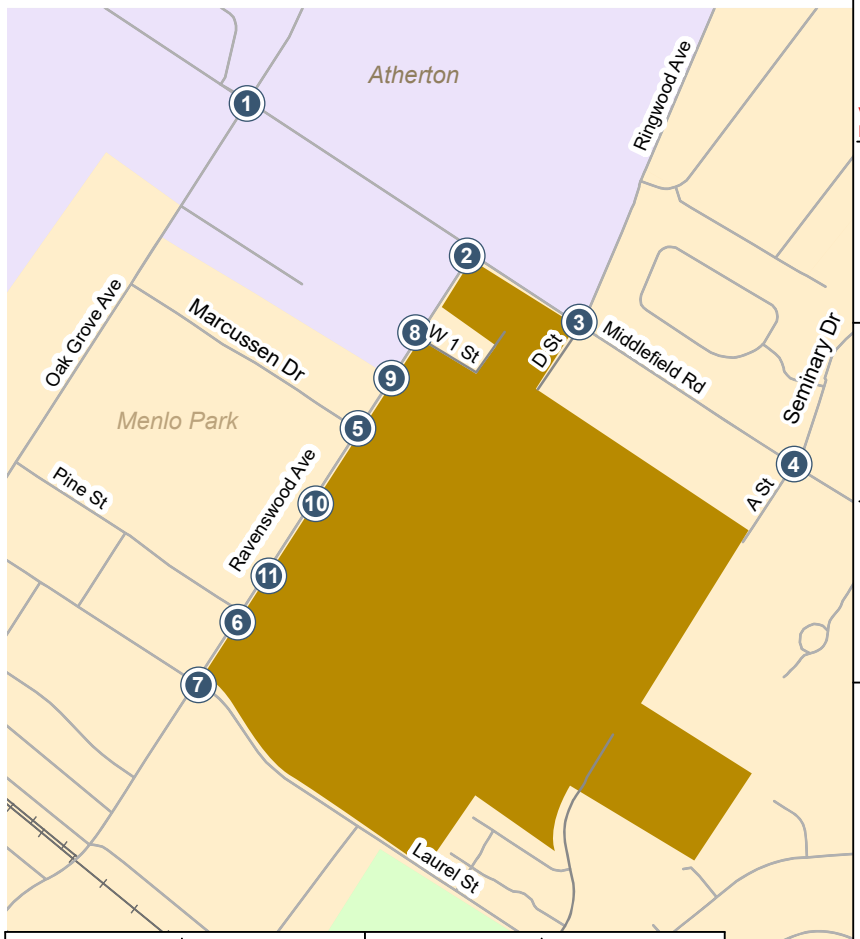
Under background plus variant conditions, access to the proposed project site would be provided via two signalized driveways along Middlefield Road and five unsignalized driveways along Ravenswood Avenue. The variant was analyzed with all improvements that were analyzed for the project conditions discussed in the previous section. The project driveways were analyzed with the following characteristics. The variant lane configurations are shown on Figure 7.

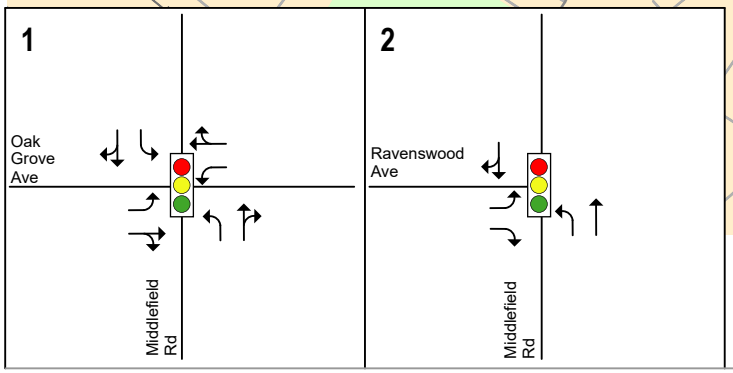
- Middlefield Road & Ringwood Avenue – The project driveway is proposed to be the west leg of the signalized intersection. The lane configurations of the intersection would remain the same as existing conditions. The signal was analyzed with the same timing and phasing as background plus project (with improvements).
- Middlefield Road & Seminary Drive – The project driveway is proposed to be the west leg of the signalized intersection. The lane configurations and signal timing would be the same as background plus project (with improvements).

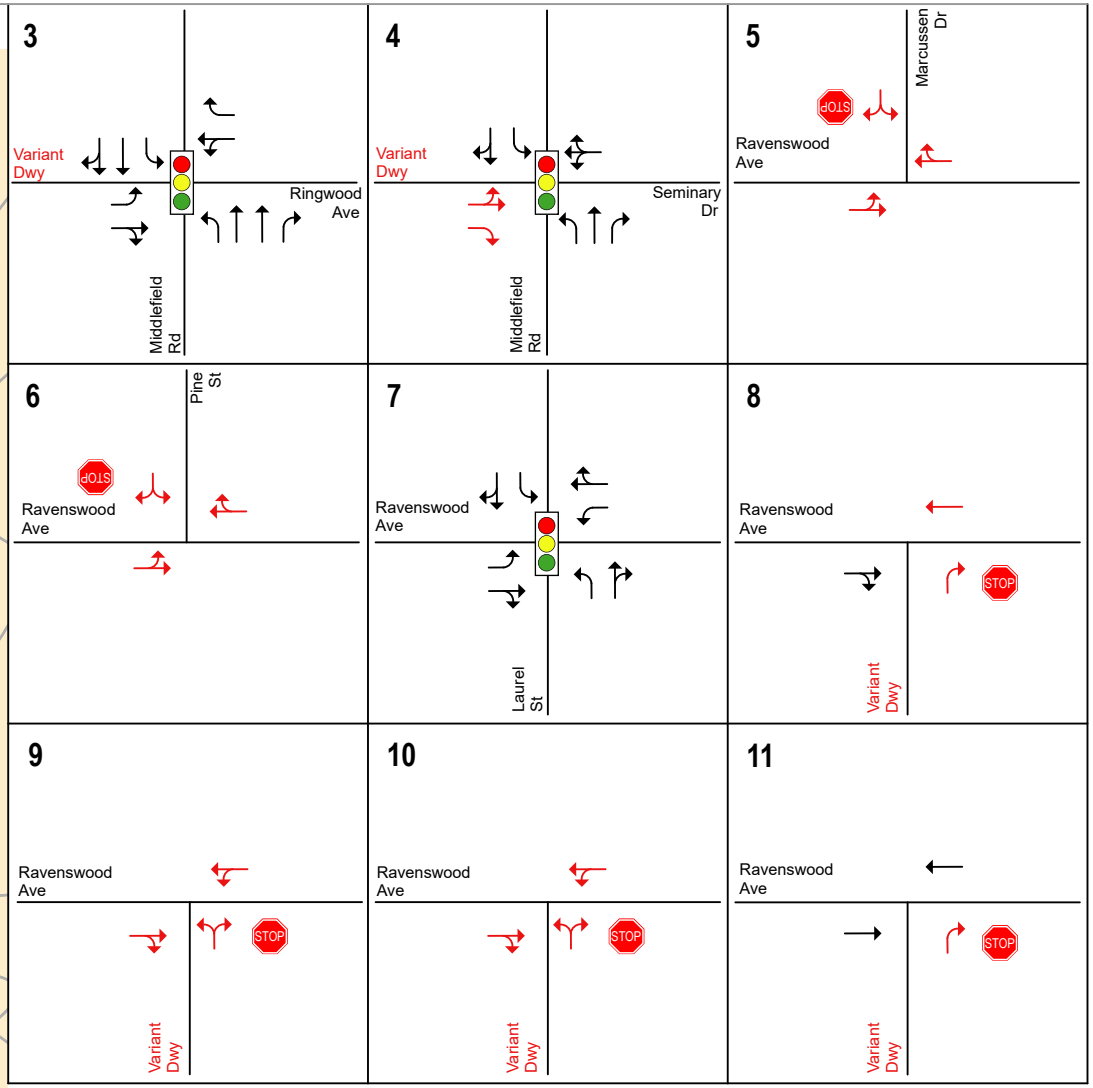
- W 1st Street & Ravenswood Avenue – The project driveway is proposed to be the south leg of the unsignalized intersection as a stop-controlled approach. The project driveway approach would have one right-turn lane and would be restricted to right-in-right-out only movements.
- Loop Road & Ravenswood Avenue – Two project driveways would be connected via Loop Road and would intersect Ravenswood Avenue east and west of Marcussen Drive. The driveway approaches are proposed to be the south legs of the unsignalized intersections as stop-controlled approaches. The project driveway approaches would each have one shared left-right lane and the driveways would allow all turning movements.
- R1 Driveways & Ravenswood Avenue – Two project driveways would be connected in a similar fashion as Loop Road and would intersect Ravenswood Avenue east and west of Pine Street. The driveway approaches are proposed to be the south legs of the unsignalized intersections. The western driveway would have one inbound lane and be restricted to right-in only. The eastern driveway would have one stop-controlled approach with one right-turn lane and be restricted to right-out only.

Intersection Turning Movements Volumes

Background plus variant conditions reflect the projected traffic volumes with the completion of the variant and future developments. Variant-generated traffic was added to the background condition traffic volumes. The background plus variant traffic volumes are shown on Figure 8.







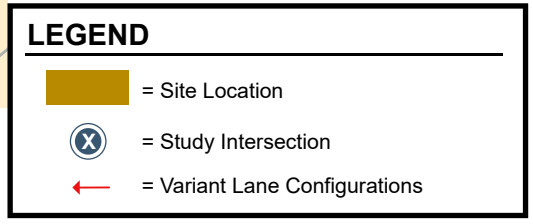


Figure 7
Variant Lane Configurations

NORTH
Not to Scale

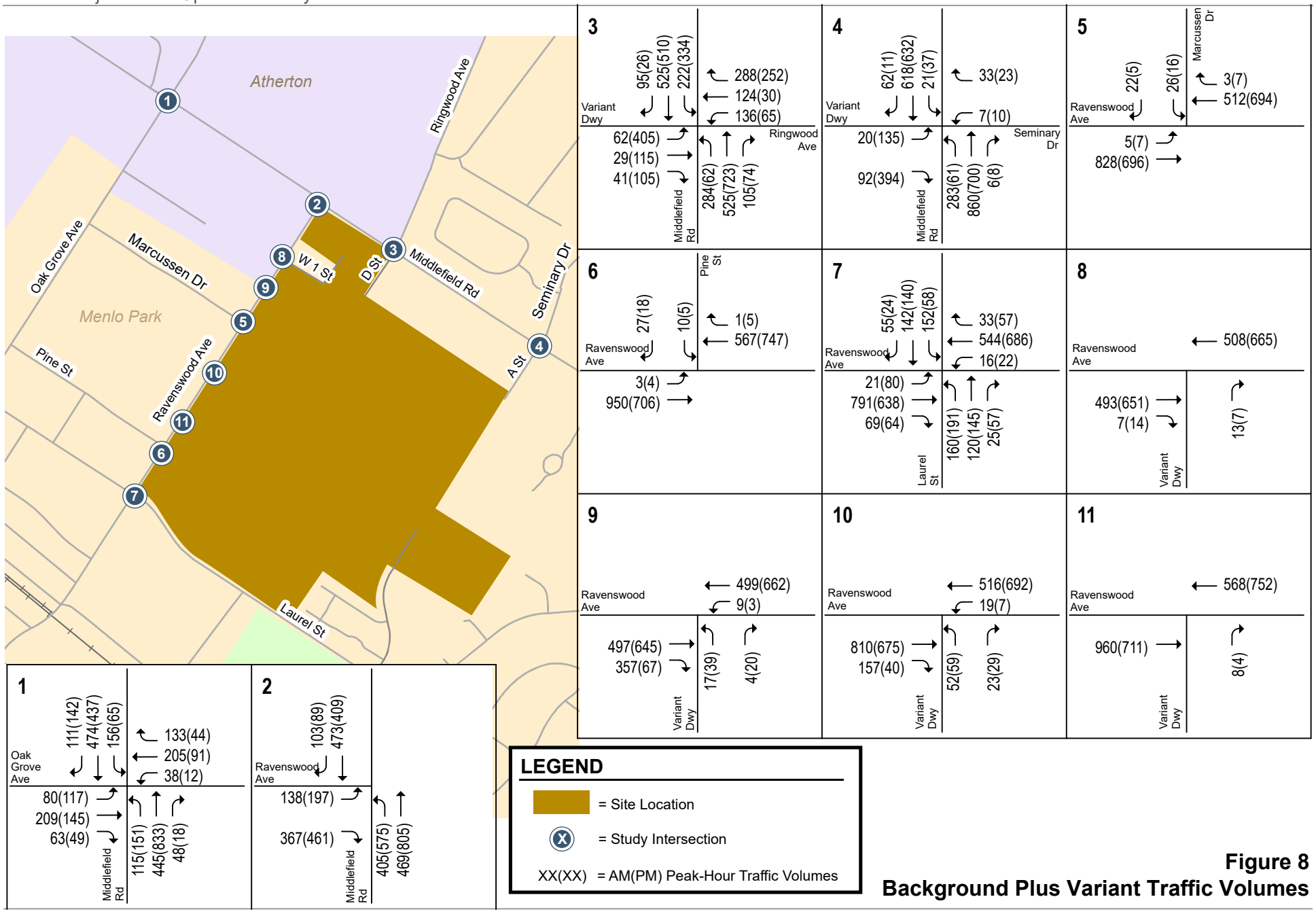


Figure 8
Background Plus Variant Traffic Volumes

Background Plus Variant Conditions Level of Service Analysis

Table 12 shows the average delay and the corresponding LOS during the AM and PM peak hour periods under background plus variant conditions.

Table 12
Background Plus Variant Conditions Level of Service Analysis

#	Intersection	Control	Peak Hour	Background + Project With Improvements		Background + Variant Conditions	
				Avg. Delay [1]	LOS	Avg. Delay [1]	LOS
1	Middlefield Rd & Oak Grove Ave	Signal	AM	**101.3**	**F**	**91.0**	**F**
			PM	29.2	C	29.8	C
2	Middlefield Rd & Ravenswood Ave	Signal	AM	**57.5**	**E**	52.0	D
			PM	31.8	C	31.7	C
3	Middlefield Rd & Ringwood Ave/Project Dwy	Signal	AM	**71.6**	**E**	**68.2**	**E**
			PM	**OVR**	**F**	**OVR**	**F**
4	Middlefield Rd & Seminary Dr/Project Dwy	Signal	AM	**63.2**	**E**	**60.1**	**E**
			PM	49.2	D	46.9	D
5	Marcussen Dr & Ravenswood Ave	OWSC	AM	14.9	B	24.7	C
			PM	24.0	C	32.1	D
6	Pine St & Ravenswood Ave	OWSC	AM	**39.8**	**E**	**67.5**	**F**
			PM	**58.1**	**F**	**OVR**	**F**
7	Laurel St & Ravenswood Ave	Signal	AM	38.7	D	37.0	D
			PM	46.6	D	45.6	D
8	W 1st St/Projecy Dwy & Ravenswood Ave	OWSC	AM	8.1	A	11.0	B
			PM	21.5	C	24.0	C
9	East Loop Rd & Ravenswood Ave	OWSC	AM	-	-	20.9	C
			PM	**-**	**-**	31.8	D
10	West Loop Rd & Ravenswood Ave	OWSC	AM	-	-	**40.0**	**E**
			PM	-	-	**OVR**	**F**
11	East R1 Dwy & Ravenswood Ave	OWSC	AM	-	-	12.4	B
			PM	-	-	5.7	A

Notes:

Avg Delay = Average Delay in seconds; LOS = Level of Service; OWSC = One Way Stop Control; OVR = Delay exceeds 120 seconds

[1] At signalized intersections, delay shown is the weighted average delay for all vehicles entering the intersection calculated using the calibrated SimTraffic model. At unsignalized intersections, the delay is shown for the worst stop controlled approach or uncontrolled left-turn movement, whichever is greater.

Bold indicates LOS "E" or "F".

The results show that the following four study intersections would operate at LOS E or F during at least one of the peak hours under background plus variant conditions.

- Middlefield Road & Oak Grove Avenue (AM)
- Middlefield Road & Ringwood Avenue (AM & PM)
- Middlefield Road & Seminary Drive (AM)
- Pine Street & Ravenswood Avenue (AM & PM)
- West Loop Road & Ravenswood Avenue (AM & PM)

At the Pine Street and Ravenswood Avenue intersection, the analysis shows that the intersection delay would increase, and the LOS would decline from E to an F during the AM peak hour under background plus variant conditions compared to project conditions. During the PM peak hour, the analysis shows that the intersection delay would increase, and the LOS would continue to operate at LOS F. The increase in delay at the Ravenswood/Pine intersection under the variant could be attributed to the additional driveways provided in close proximity along Ravenswood Avenue.

Under background plus variant conditions, there would be additional driveways on Ravenswood Avenue. The intersection at the East Loop Road driveway and Ravenswood Avenue would operate at LOS C during the AM peak hour and LOS D during the PM peak hour. The intersection at the West Loop Road driveway and Ravenswood Avenue would operate at LOS E during the AM peak hour and LOS F during the PM peak hour. The intersection at the East R1 driveway and Ravenswood Avenue would operate at LOS B during the AM peak hour and LOS A during the PM peak hour.

Background Plus Variant Conditions Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis. The queues (measured in feet per lane) were calculated by the microscopic simulation model. Table 13 shows the 95th percentile and average queues at all intersection movements during the AM and PM peak hour periods under background plus variant conditions. A comparison of the 95th percentile and average queues for existing, background, background plus project, background plus project (with improvements), and background plus variant is illustrated on Figures 9 – 16.

Table 13
Background Plus Variant Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Variant Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
1	Middlefield Rd & Oak Grove Ave	EBL	AM	245	203	89
			PM		181	99
		EBTR	AM	425	**572**	231
			PM		234	143
		WBL	AM	45	**81**	36
			PM		42	0
		WBTR	AM	130	**837**	**341**
			PM		**170**	96
		NBL	AM	130	**175**	97
			PM		**164**	84
		NBTR	AM	985	475	265
			PM		719	362
		SBL	AM	150	**200**	110
			PM		143	58
		SBTR	AM	1000	**2117**	987
			PM		407	227
2	Middlefield Rd & Ravenswood Ave	EBL	AM	355	319	156
			PM		**378**	206
		EBR	AM	125	**222**	94
			PM		**242**	117
		NBL	AM	435	**440**	306
			PM		**457**	292
		NBT	AM	435	98	16
			PM		**443**	212
		SBTR	AM	985	**1138**	575
			PM		720	389

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 13 (continued)
Background Plus Variant Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Variant Conditions 95th Percentile Queue (ft/ln)[1]	Background Plus Variant Conditions Average Queue (ft/ln)[2]
3	Middlefield Rd & Ringwood Ave/Project Driveway	EBL	AM	145	134	56
			PM		**1725**	**1612**
		EBTR	AM	145	200	63
			PM		**1879**	**1580**
		WBLT	AM	250	**287**	195
			PM		159	89
		WBR	AM	250	194	107
			PM		**259**	151
		NBL	AM	200	**236**	186
			PM		**210**	94
		NBT1	AM	885	**1208**	706
			PM		810	406
		NBT2	AM	885	**935**	670
			PM		786	491
		NBR	AM	150	**203**	104
			PM		**188**	73
		SBL	AM	160	**218**	156
			PM		**187**	**169**
		SBT	AM	450	**509**	360
			PM		**461**	328
		SBTR	AM	320	**610**	**350**
			PM		**598**	320
4	Middlefield Rd & Seminary Dr/Project Driveway	EBLT	AM	250	**277**	67
			PM		**651**	**288**
		EBR	AM	90	**103**	48
			PM		**131**	**110**
		WBLTR	AM	250	88	34
			PM		44	17
		NBL	AM	325	**416**	279
			PM		311	114
		NBT	AM	360	**2156**	**861**
			PM		**929**	**511**
		NBR	AM	105	43	0
			PM		42	0
		SBL	AM	100	66	24
			PM		91	38
		SBTR	AM	885	758	341
			PM		**1028**	545

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 13 (continued)
Background Plus Variant Conditions Queuing Analysis

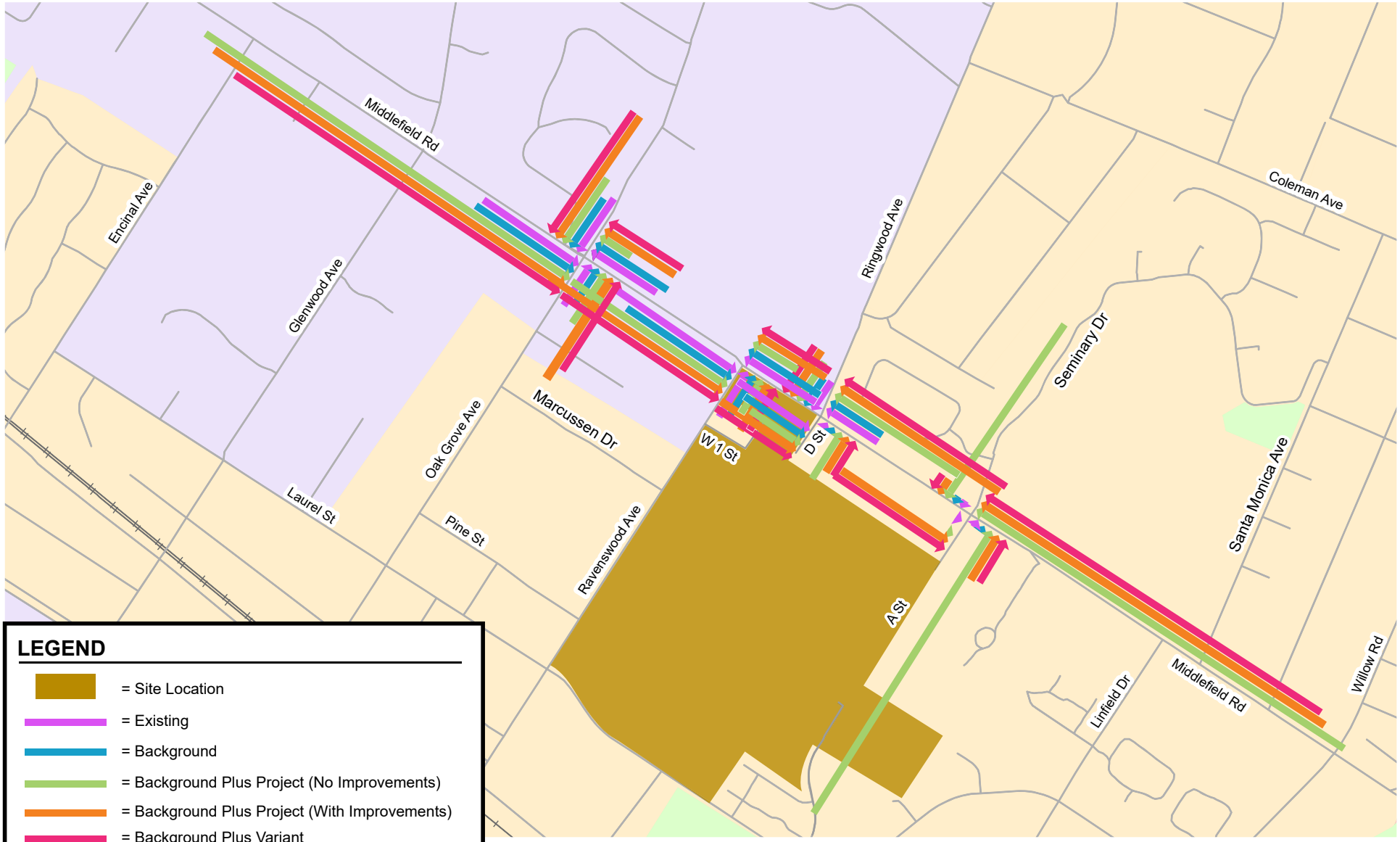
#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Variant Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
5	Marcussen Dr & Ravenswood Ave	EBL	AM	-	11	-
			PM		21	-
		EBT	AM	730	116	15
			PM		136	21
		WBTR	AM	760	8	-
			PM		87	-
		SBLR	AM	985	69	33
			PM		52	20
6	Pine St/Project Driveway & Ravenswood Ave	EBL	AM	-	0	0
			PM		16	0
		EBT	AM	210	33	0
			PM		27	0
		WBTR	AM	730	105	64
			PM		89	60
		SBLR	AM	1000	102	39
			PM		110	41
7	Laurel St & Ravenswood Ave	EBL	AM	125	66	19
			PM		119	65
		EBTR	AM	365	**789**	**466**
			PM		**983**	**475**
		WBL	AM	100	57	16
			PM		58	19
		WBTR	AM	220	164	135
			PM		155	136
		NBL	AM	115	**141**	96
			PM		**151**	100
		NBTR	AM	1250	353	154
			PM		705	396
		SBL	AM	130	**160**	103
			PM		**156**	76
		SBTR	AM	480	289	155
			PM		350	200

Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.

Table 13 (continued)
Background Plus Variant Conditions Queuing Analysis

#	Intersection	Movement	Peak Period	Storage Length (ft/ln)	Background Plus Variant Conditions	
					95th Percentile Queue (ft/ln)[1]	Average Queue (ft/ln)[2]
8	W 1st St/Project Driveway & Ravenswood Ave	EBTR	AM	365	103	17
			PM		170	43
		WBT	AM	365	-	-
			PM		39	0
		NBR	AM	255	39	0
			PM		26	0
9	East Loop Rd & Ravenswood Ave	EBTR	AM	-	58	0
			PM		84	16
		WBL	AM	-	26	0
			PM		0	0
		WBT	AM	-	-	-
			PM		81	0
		NBLR	AM	-	45	16
			PM		87	40
10	West Loop Rd & Ravenswood Ave	EBTR	AM	-	68	0
			PM		67	0
		WBL	AM	-	40	0
			PM		21	0
		WBT	AM	-	112	22
			PM		373	148
		NBLR	AM	-	113	52
			PM		435	180
11	East R1 Dwy & Ravenswood Ave	EBT	AM	-	19	0
			PM		0	0
		WBT	AM	-	329	146
			PM		366	259
		NBR	AM	-	27	0
			PM		20	0

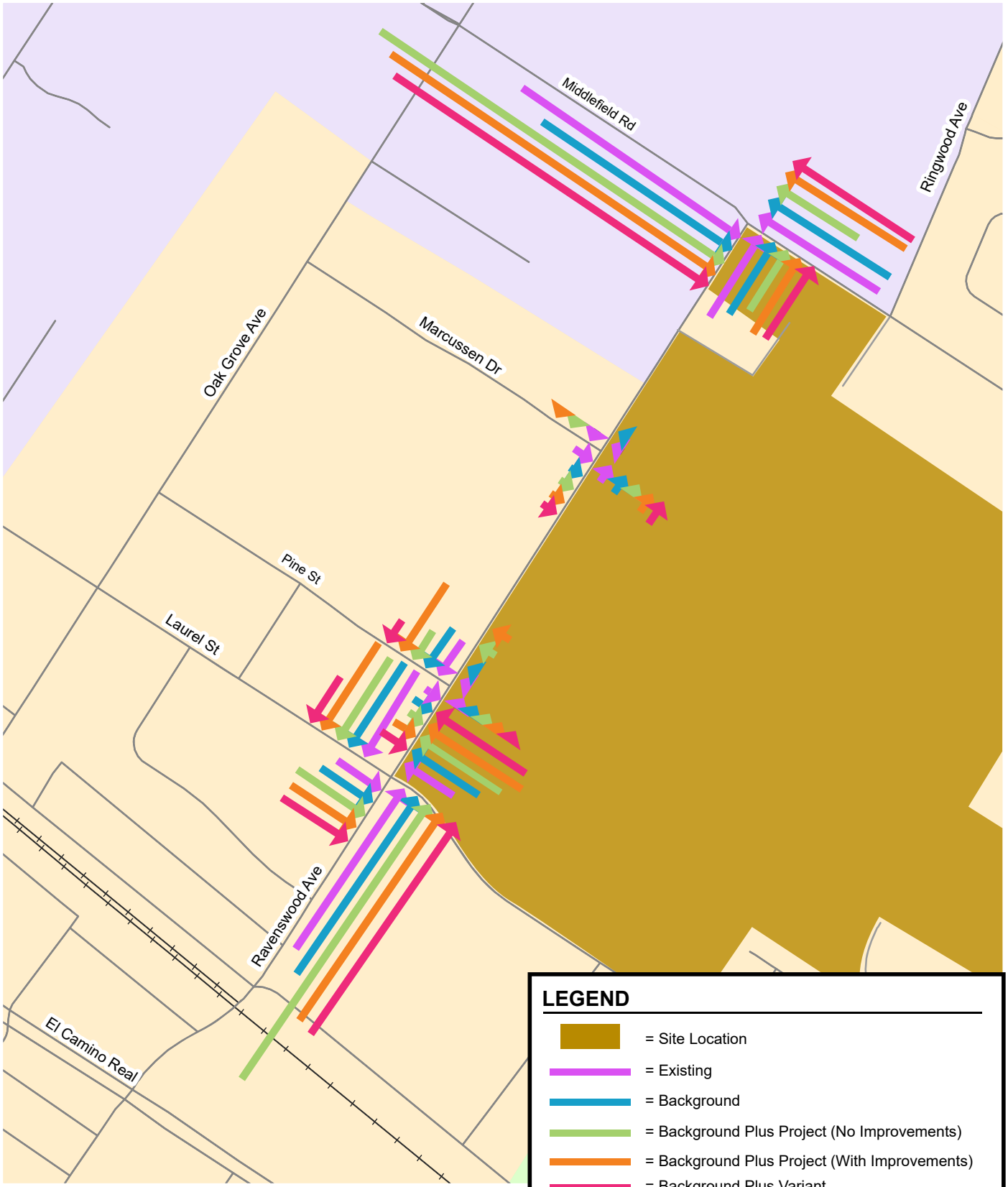
Notes:
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left-turn movement, T = through movement, R = right-turn movement
[1] Based on 95th percentile queues reported by SimTraffic software.
[2] Based on average queues reported by SimTraffic software.
Bold indicates that the queue length exceeds the storage capacity.



Note: Queue lengths are approximate.

Figure 9
Middlefield Road Corridor AM Peak Hour – 95th Percentile Queues

NORTH
Not to Scale



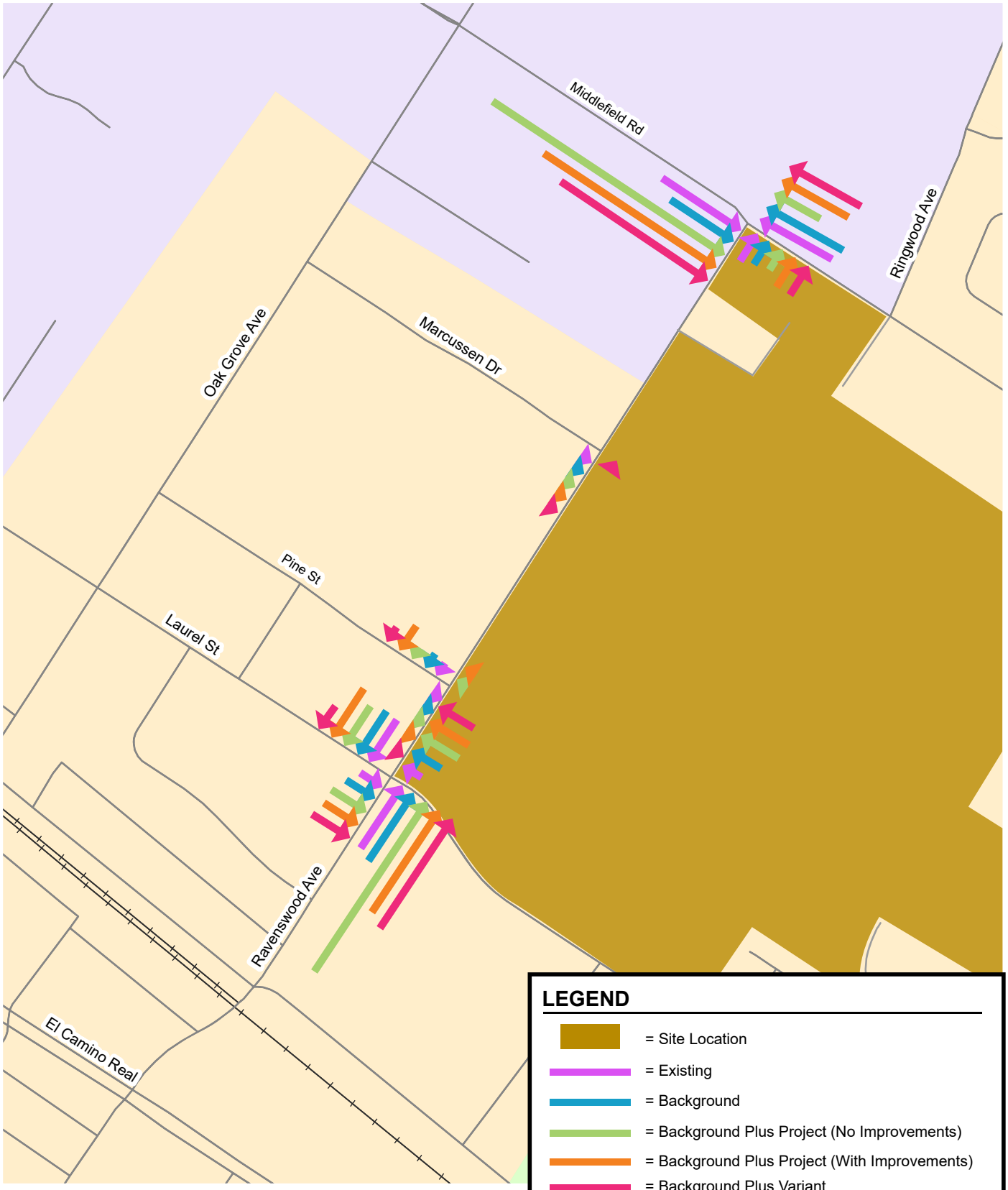
Note: Queue lengths are approximate

Figure 10
Ravenswood Avenue Corridor AM Peak Hour – 95th Percentile Queues

Note: Queue lengths are approximate.

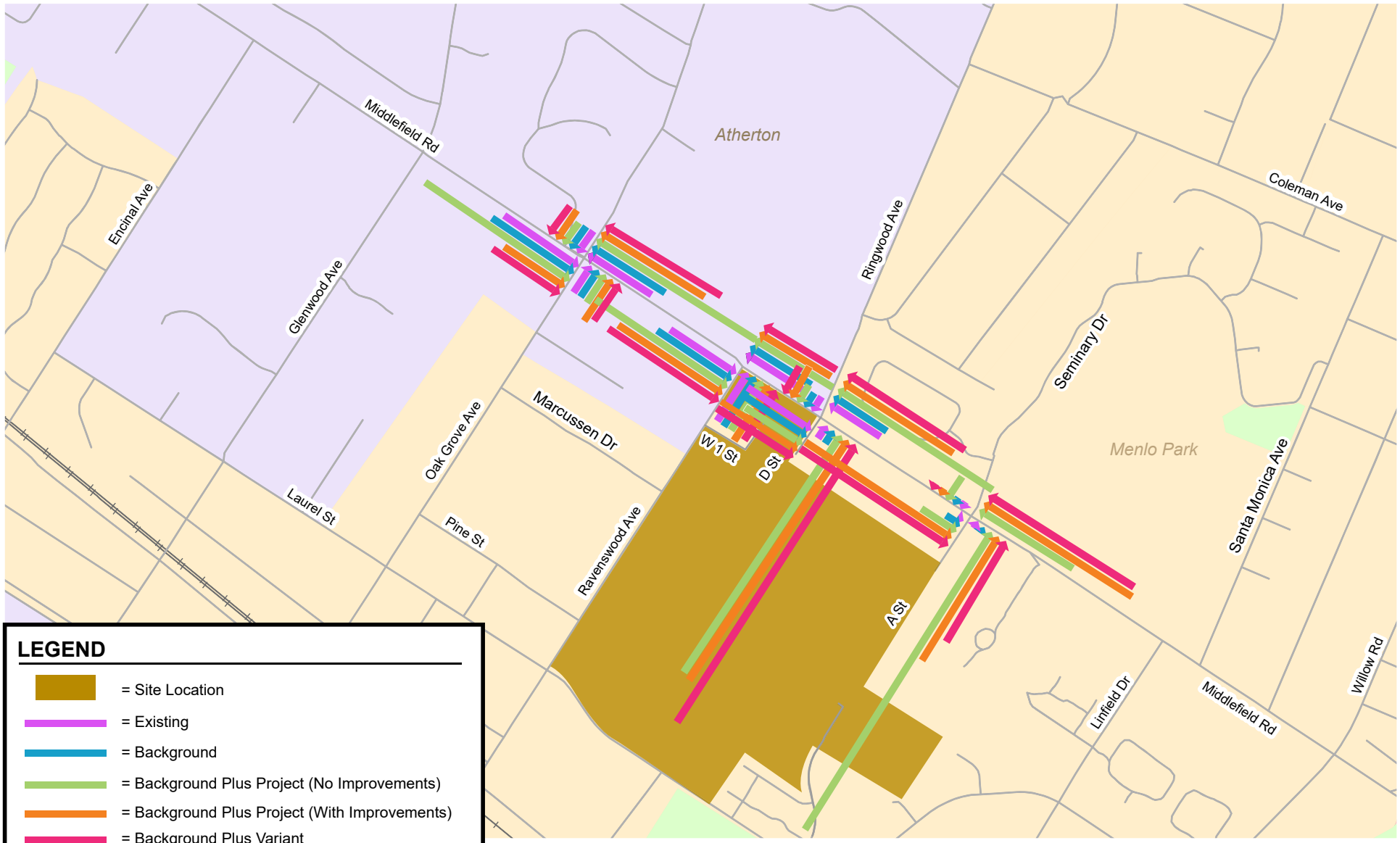
Figure 11
Middlefield Road Corridor AM Peak Hour – Average Queues

NORTH
Not to Scale



Note: Queue lengths are approximate

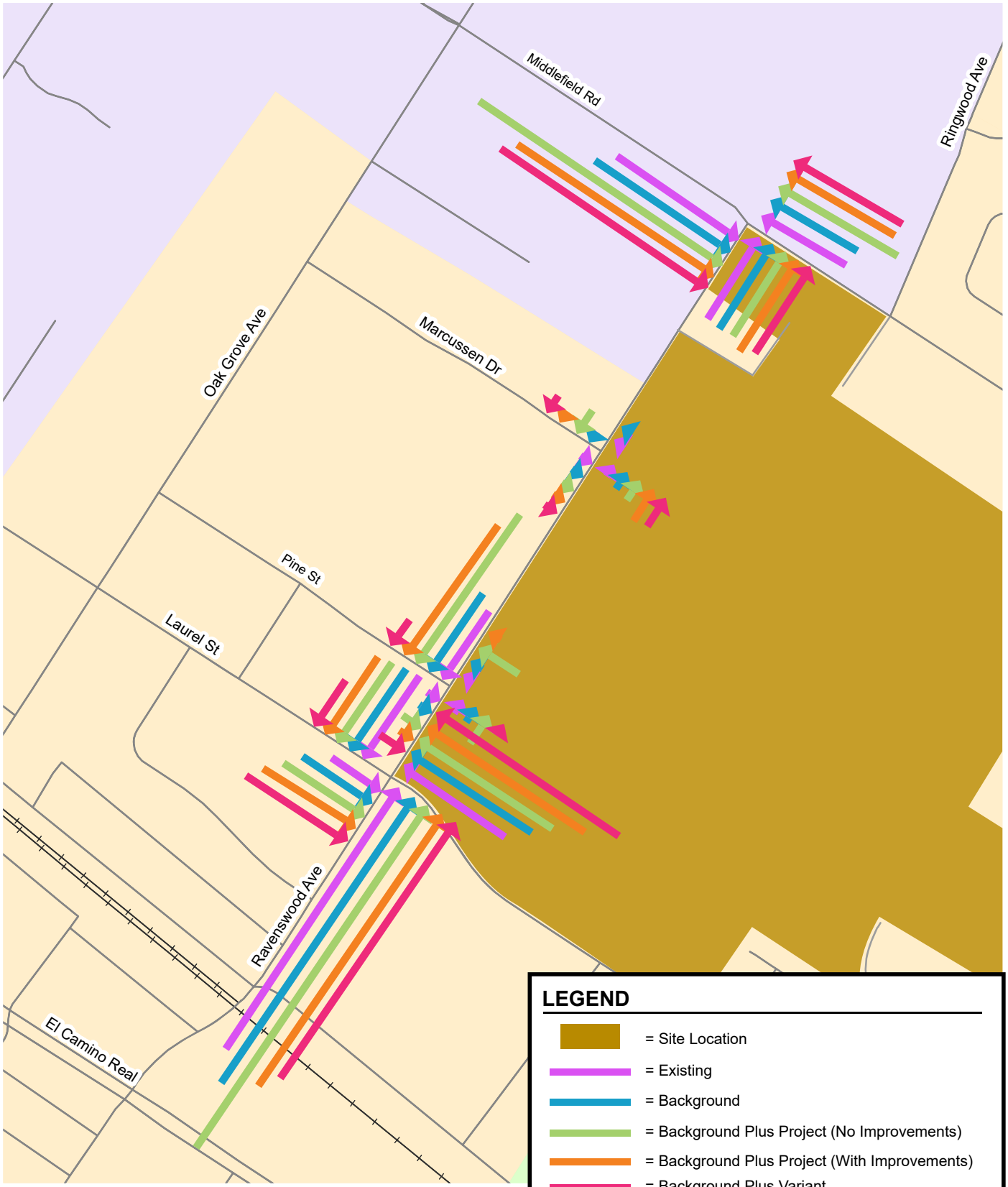
Figure 12
Ravenswood Avenue Corridor AM Peak Hour – Average Queues



Note: Queue lengths are approximate.

Figure 13
Middlefield Road Corridor PM Peak Hour – 95th Percentile Queues

NORTH
Not to Scale

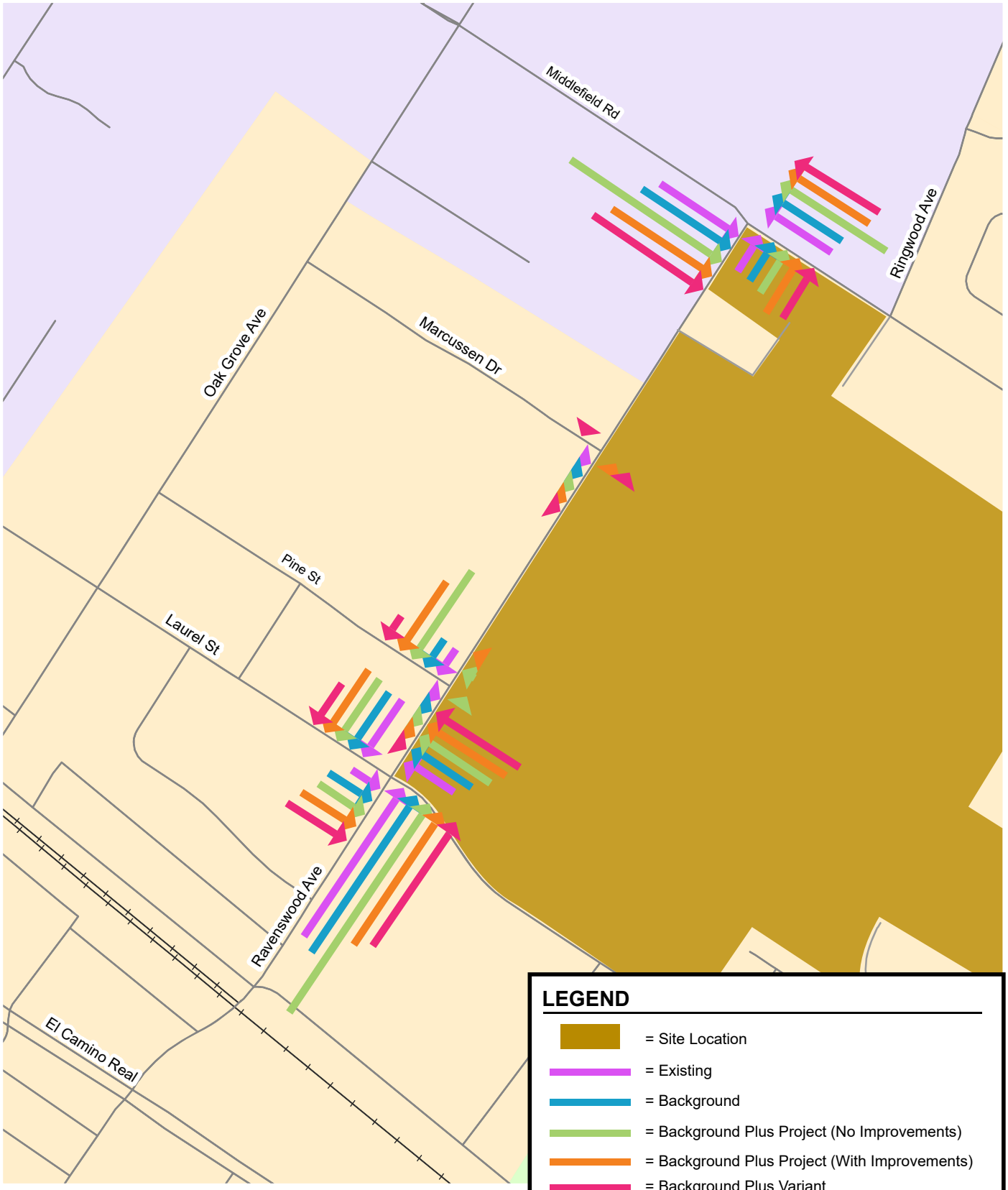


Note: Queue lengths are approximate.

Figure 14
Ravenswood Avenue Corridor PM Peak Hour – 95th Percentile Queues

Note: Queue lengths are approximate.

Figure 15
Middlefield Road Corridor PM Peak Hour – Average Queues



Note: Queue lengths are approximate.

Figure 16
Ravenswood Avenue Corridor PM Peak Hour – Average Queues

Variant Effects

A comparison of the percentage of traffic served at each intersection under background plus project (with improvements) and background plus variant for the AM and PM peak hour scenarios based on the simulation analysis is shown in Table 14. As shown in this table, the peak hour traffic operations under background plus variant conditions would be similar or marginally better compared to background plus project (with improvements) conditions.

Table 14
Percentage of Traffic Served – Variant Conditions

#	Intersection	Control	Peak Hour	Percentage of Traffic Served		
				Background + Project With Improvements	Background + Variant	Difference
1	Middlefield Rd & Oak Grove Ave	Signal	AM	97%	97%	0%
			PM	95%	99%	4%
2	Middlefield Rd & Ravenswood Ave	Signal	AM	94%	94%	0%
			PM	93%	97%	4%
3	Middlefield Rd & Ringwood Ave/Project Dwy	Signal	AM	96%	96%	0%
			PM	91%	95%	4%
4	Middlefield Rd & Seminary Dr/Project Dwy	Signal	AM	97%	97%	0%
			PM	99%	100%	1%
5	Marcussen Dr & Ravenswood Ave	OWSC	AM	88%	89%	1%
			PM	95%	98%	3%
6	Pine St & Ravenswood Ave	OWSC	AM	87%	88%	1%
			PM	96%	98%	2%
7	Laurel St & Ravenswood Ave	Signal	AM	89%	89%	0%
			PM	97%	99%	2%
8	W 1st St/Projecy Dwy & Ravenswood Ave	OWSC	AM	90%	92%	2%
			PM	95%	97%	2%
9	East Loop Rd & Ravenswood Ave	OWSC	AM	-	89%	-
			PM	-	97%	-
10	West Loop Rd & Ravenswood Ave	OWSC	AM	-	88%	-
			PM	-	98%	-
11	East R1 Dwy & Ravenswood Ave	OWSC	AM	-	89%	-
			PM	-	98%	-

Conclusions

A simulation analysis of traffic operations was conducted for the proposed Parkline project in Menlo Park. The project proposes to redevelop the approximately 63-acre site to include 550 new housing units (including affordable housing), 1.1 million s.f. of replacement office and R&D uses, and new community-oriented retail space. Access to the project site would be provided via driveways on Middlefield Road at Seminary Drive and Ringwood Avenue and on Ravenswood Avenue at W 1st Street, Pine Street/4th Street, and Loop Road.

The proposed project is expected to generate 1,368 AM peak hour trips and 1,316 PM peak hour trips after applying a 25% TDM reduction. An evaluation of traffic operations on Middlefield Road and Ravenswood Avenue near the project site showed that the project would contribute to significant traffic congestion along Middlefield Road. The following improvements were identified to improve traffic operations along Middlefield Road and Ravenswood Avenue:

- A new traffic signal at Middlefield Road & Seminary Drive with protected north/south phasing and split east/west phasing and optimized cycle length.
- Extension of the northbound left-turn storage length at Middlefield Road & Seminary Drive from 50 feet to 325 feet.
- Adding forced-turn islands on the east and west approaches of the Middlefield Road & Seminary Drive intersection to eliminate through movements and prevent future cut-through traffic on Seminary Drive.
- Changing the east/west phasing at Middlefield Road & Ringwood Avenue from permitted to split phasing and modifying the signal timings at Middlefield Road & Ravenswood Avenue. The analysis assumed half cycle length at the Middlefield/Ravenswood intersection during the PM peak hour.
- Adding a center median with left-turn pockets or two-way left-turn lane along Ravenswood Avenue between the proposed project driveway at W 1st Street and Laurel Street.

With these improvements, the analysis showed that traffic operations would improve significantly along Middlefield Road near the project site.

A simulation analysis was also conducted for the proposed variant which would incorporate the existing church site into the project, relocate some housing units to the Middlefield Road corner of the project site, and reconfigure the site circulation so that the majority of residential vehicles would need to use the office/R&D driveways. In addition to the proposed driveways on Middlefield Road listed above, access to the project site would be provided on Ravenswood Avenue at W 1st Street and four new driveways between Laurel Street and W 1st Street. The variant was analyzed with all the improvements discussed above.

The proposed variant is expected to generate 1,441 AM peak hour trips and 1,393 PM peak hour trips after applying a 25% TDM reduction. Based on the analysis, the peak hour traffic operations under background plus variant conditions would be similar to background plus project (with improvements) conditions.

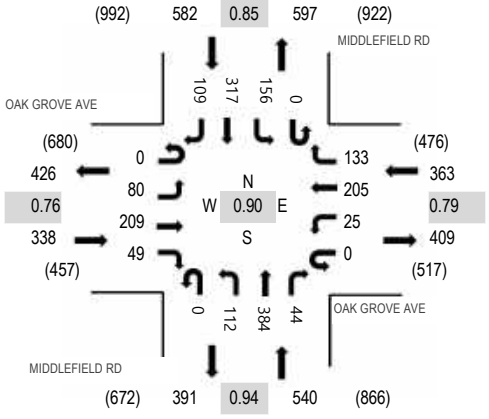
Attachment A

Intersection Traffic Counts

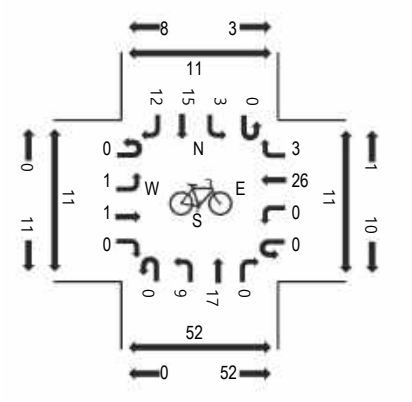
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 MIDDLEFIELD RD & OAK GROVE AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

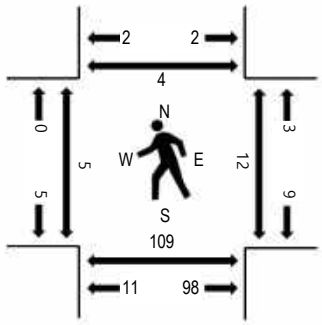
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	OAK GROVE AVE Eastbound				OAK GROVE AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	11	6	5	0	1	13	3	0	17	34	1	0	4	35	21	151	1,047	0	2	0	1
7:15 AM	0	8	12	4	0	0	8	9	0	20	42	0	0	7	53	23	186	1,402	0	0	1	0
7:30 AM	0	9	14	6	0	0	19	11	0	19	93	4	0	17	73	31	296	1,704	0	0	2	0
7:45 AM	0	32	29	8	0	2	45	35	0	27	102	3	0	22	71	38	414	1,823	4	1	9	0
8:00 AM	0	17	77	17	0	7	71	37	0	26	106	11	0	49	63	25	506	1,744	1	2	42	2
8:15 AM	0	18	83	10	0	11	42	42	0	32	90	21	0	59	70	10	488		0	7	39	2
8:30 AM	0	13	20	14	0	5	47	19	0	27	86	9	0	26	113	36	415		0	2	19	0
8:45 AM	0	19	19	6	0	2	34	13	0	20	73	3	0	21	96	29	335		0	1	4	0

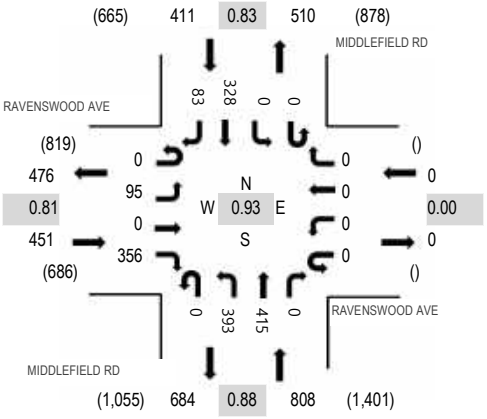
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	0	1	0	0	0	0	0	0	1	1	0	0	4	0	8
Lights	0	75	208	47	0	25	204	132	0	111	375	43	0	154	308	105	1,787
Mediums	0	4	1	1	0	0	1	1	0	1	8	0	0	2	5	4	28
Total	0	80	209	49	0	25	205	133	0	112	384	44	0	156	317	109	1,823

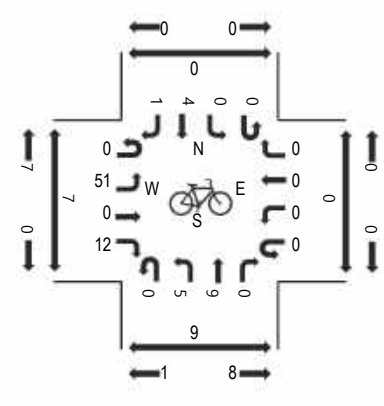
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 MIDDLEFIELD RD & RAVENSWOOD AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

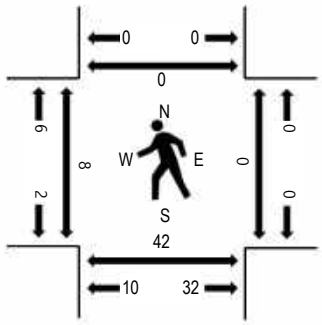
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	9	0	40	0	0	0	0	0	50	43	0	0	0	23	17	182	1,082	0	0	0	0
7:15 AM	0	6	0	38	0	0	0	0	0	66	55	0	0	0	41	16	222	1,348	0	0	0	0
7:30 AM	0	22	0	49	0	0	0	0	0	66	94	0	0	0	51	19	301	1,567	0	0	3	0
7:45 AM	0	15	0	56	0	0	0	0	0	95	124	0	0	0	73	14	377	1,655	3	0	4	0
8:00 AM	0	20	0	106	0	0	0	0	0	103	134	0	0	0	71	14	448	1,670	6	0	8	0
8:15 AM	0	30	0	110	0	0	0	0	0	102	109	0	0	0	72	18	441		1	0	23	0
8:30 AM	0	28	0	66	0	0	0	0	0	87	84	0	0	0	97	27	389		1	0	8	0
8:45 AM	0	17	0	74	0	0	0	0	0	101	88	0	0	0	88	24	392		0	0	3	0

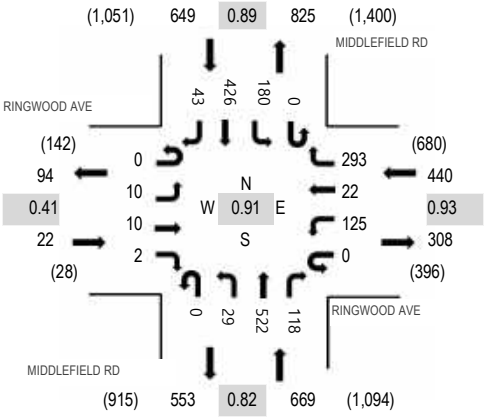
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	2	0	2	0	0	0	0	0	1	1	0	0	0	0	4	10
Lights	0	86	0	347	0	0	0	0	0	373	409	0	0	0	322	74	1,611
Mediums	0	7	0	7	0	0	0	0	0	19	5	0	0	0	6	5	49
Total	0	95	0	356	0	0	0	0	0	393	415	0	0	0	328	83	1,670

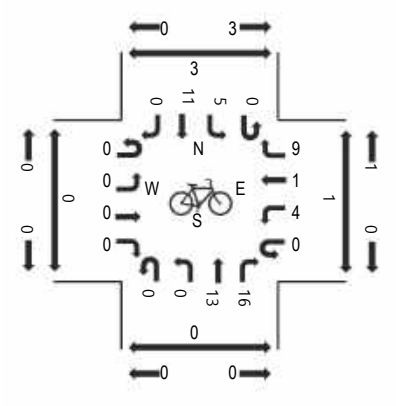
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 MIDDLEFIELD RD & RINGWOOD AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

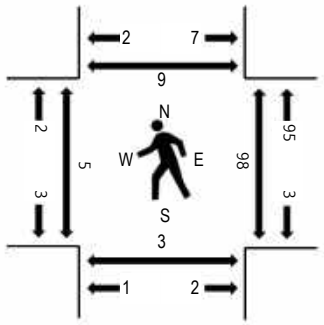
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RINGWOOD AVE Eastbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	0	1	0	1	1	27	0	12	64	2	0	12	47	5	173	1,074	0	1	0	0
7:15 AM	0	0	0	1	0	10	2	40	0	1	88	4	0	6	63	7	222	1,384	2	0	0	3
7:30 AM	0	1	0	1	0	6	2	57	0	2	106	6	0	18	83	2	284	1,651	0	12	0	1
7:45 AM	0	0	0	0	0	16	3	72	0	5	143	27	0	20	100	9	395	1,780	1	3	1	1
8:00 AM	0	3	0	1	0	31	4	76	0	5	155	45	0	57	98	8	483	1,779	2	39	1	4
8:15 AM	0	3	10	1	0	41	4	74	0	10	124	32	0	76	94	20	489		0	43	1	4
8:30 AM	0	4	0	0	0	37	11	71	0	9	100	14	0	27	134	6	413		2	13	0	0
8:45 AM	0	0	0	1	0	23	3	68	0	3	123	14	0	26	125	8	394		0	1	1	1

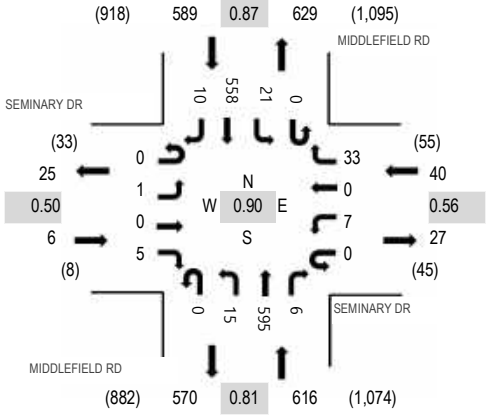
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	3	0	0	1	2	0	6
Lights	0	10	10	2	0	125	22	288	0	28	501	115	0	177	416	42	1,736
Mediums	0	0	0	0	0	0	0	5	0	1	18	3	0	2	8	1	38
Total	0	10	10	2	0	125	22	293	0	29	522	118	0	180	426	43	1,780

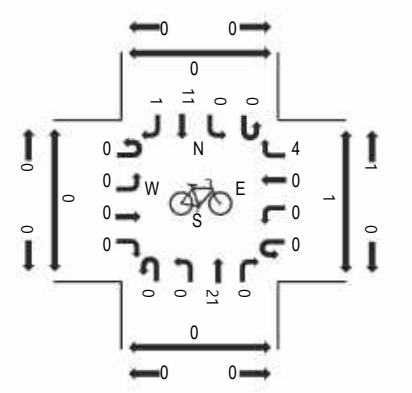
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 MIDDLEFIELD RD & SEMINARY DR AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

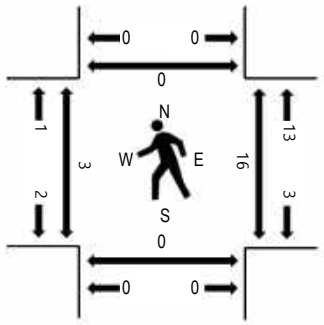
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SEMINARY DR Eastbound				SEMINARY DR Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	1	0	1	0	0	81	0	0	0	39	2	124	804	0	0	0	0
7:15 AM	0	0	0	1	0	0	0	5	0	3	89	0	0	6	69	1	174	1,028	0	1	0	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	117	0	0	5	92	0	215	1,160	1	1	0	0
7:45 AM	0	0	0	0	0	1	0	7	0	1	166	1	0	6	108	1	291	1,238	0	4	0	0
8:00 AM	0	1	0	1	0	5	0	13	0	0	199	0	0	4	124	1	348	1,251	1	5	0	0
8:15 AM	0	0	0	3	0	0	0	6	0	5	153	3	0	8	127	1	306		1	6	0	0
8:30 AM	0	0	0	1	0	1	0	7	0	4	109	2	0	4	160	5	293		1	5	0	0
8:45 AM	0	0	0	0	0	1	0	7	0	6	134	1	0	5	147	3	304		0	0	0	0

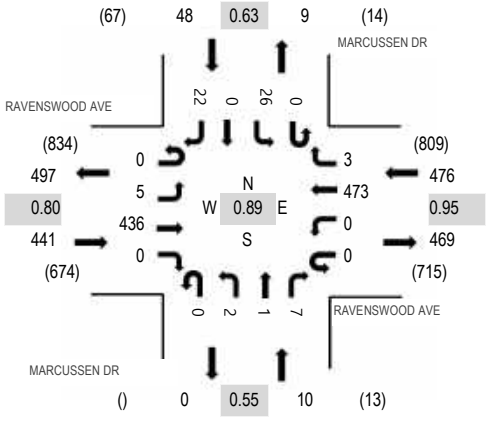
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4
Lights	0	1	0	5	0	7	0	33	0	15	573	5	0	21	548	10	1,218
Mediums	0	0	0	0	0	0	0	0	0	0	20	1	0	0	8	0	29
Total	0	1	0	5	0	7	0	33	0	15	595	6	0	21	558	10	1,251

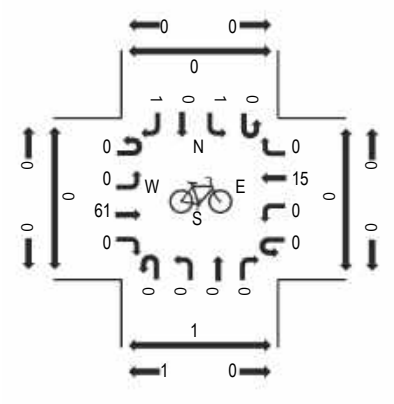
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 5 MARCUSSEN DR & RAVENSWOOD AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

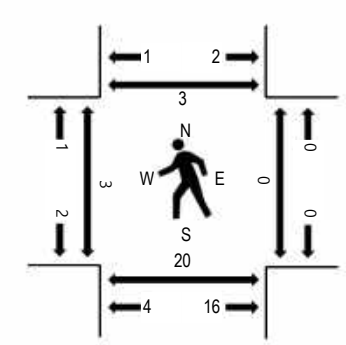
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				MARCUSSEN DR Northbound				MARCUSSEN DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	46	0	0	0	64	0	0	1	0	1	0	2	0	2	116	588	0	0	0	0
7:15 AM	0	1	47	0	0	0	78	0	0	0	0	0	0	3	0	0	129	741	0	0	1	0
7:30 AM	0	1	67	0	0	0	85	1	0	0	0	0	0	5	0	1	160	886	0	1	3	0
7:45 AM	0	0	71	0	0	0	103	2	0	0	0	1	0	3	0	3	183	934	0	0	3	0
8:00 AM	0	1	130	0	0	0	117	1	0	0	0	1	0	8	0	11	269	975	1	0	5	0
8:15 AM	0	1	136	0	0	0	122	1	0	1	1	2	0	6	0	4	274		1	0	9	2
8:30 AM	0	1	81	0	0	0	110	0	0	1	0	4	0	6	0	5	208		1	0	2	0
8:45 AM	0	2	89	0	0	0	124	1	0	0	0	0	0	6	0	2	224		0	0	4	1

Peak Rolling Hour Flow Rates

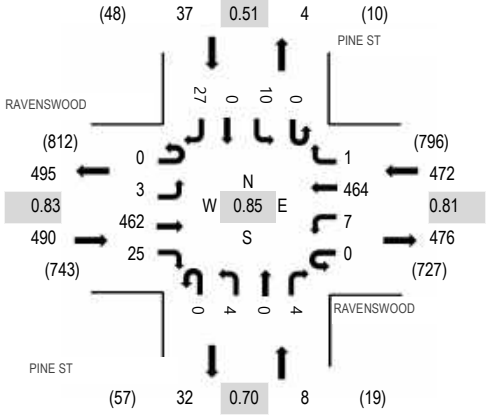
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	9
Lights	0	4	415	0	0	0	439	3	0	2	1	7	0	26	0	22	919
Mediums	0	1	17	0	0	0	29	0	0	0	0	0	0	0	0	0	47
Total	0	5	436	0	0	0	473	3	0	2	1	7	0	26	0	22	975

ALL TRAFFIC DATA SERVICES

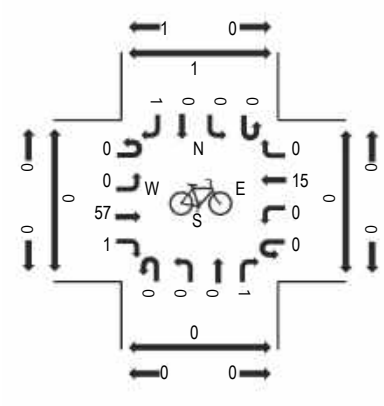
(303) 216-2439
www.alltrafficdata.net

Location: 6 PINE ST & RAVENSWOOD AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

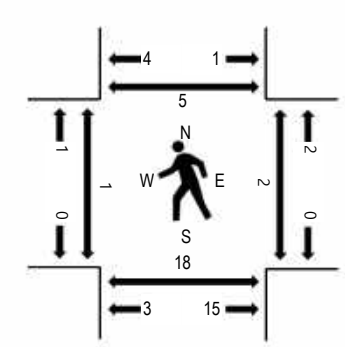
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD Eastbound				RAVENSWOOD Westbound				PINE ST Northbound				PINE ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	46	2	1	2	58	2	0	0	0	2	0	0	0	2	115	599	0	0	0	1
7:15 AM	0	0	46	4	0	4	70	1	0	0	1	2	0	2	0	1	131	736	0	0	0	1
7:30 AM	0	0	70	3	0	2	80	1	0	1	0	2	0	0	0	2	161	902	0	0	2	1
7:45 AM	0	0	76	6	0	2	100	1	0	0	0	3	0	1	0	3	192	953	1	1	4	0
8:00 AM	0	3	129	5	0	1	101	0	0	2	0	3	0	0	0	8	252	1,007	0	0	7	0
8:15 AM	0	0	143	5	0	1	144	0	0	0	0	0	0	1	0	3	297		1	1	8	1
8:30 AM	0	0	90	9	0	3	101	0	0	2	0	0	0	4	0	3	212		0	1	0	1
8:45 AM	0	0	100	6	0	2	118	1	0	0	0	1	0	5	0	13	246		0	0	3	3

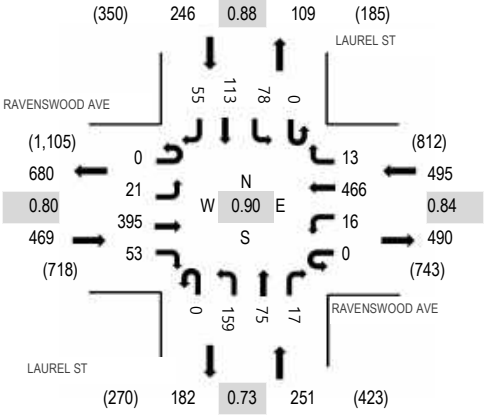
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	0	5	0	0	1	0	0	0	0	0	0	11
Lights	0	3	440	25	0	7	431	1	0	2	0	3	0	10	0	27	949
Mediums	0	0	17	0	0	0	28	0	0	1	0	1	0	0	0	0	47
Total	0	3	462	25	0	7	464	1	0	4	0	4	0	10	0	27	1,007

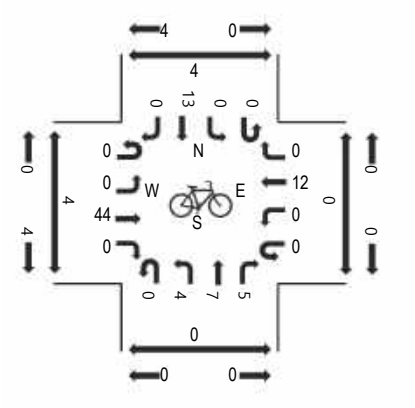
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 7 LAUREL ST & RAVENSWOOD AVE AM
Date: Wednesday, May 24, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

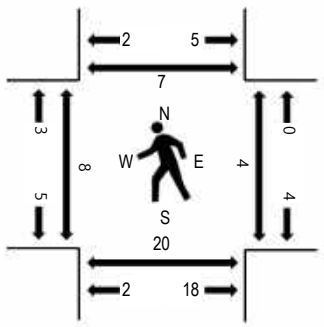
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	32	4	0	2	56	2	0	19	4	6	0	10	7	2	146	842	4	3	0	1
7:15 AM	0	4	42	6	0	2	68	1	0	21	12	2	0	6	6	4	174	1,079	2	1	2	0
7:30 AM	0	2	58	6	0	5	78	0	0	27	14	3	0	12	13	3	221	1,311	2	6	0	2
7:45 AM	0	10	69	14	0	1	100	2	0	41	23	0	0	13	22	6	301	1,410	1	0	1	1
8:00 AM	0	1	116	7	0	5	104	2	0	51	36	2	0	19	30	10	383	1,461	0	1	11	1
8:15 AM	0	5	127	15	0	2	138	7	0	31	18	3	0	18	32	10	406		2	1	3	2
8:30 AM	0	7	71	10	0	3	101	2	0	39	12	5	0	23	28	19	320		5	1	2	2
8:45 AM	0	8	81	21	0	6	123	2	0	38	9	7	0	18	23	16	352		1	1	4	2

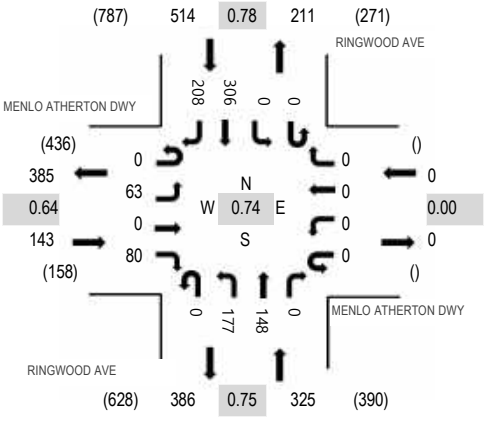
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	6	0	0	0	0	1	0	2	0	0	11
Lights	0	18	380	53	0	16	431	13	0	156	74	15	0	73	110	53	1,392
Mediums	0	3	13	0	0	0	29	0	0	3	1	1	0	3	3	2	58
Total	0	21	395	53	0	16	466	13	0	159	75	17	0	78	113	55	1,461

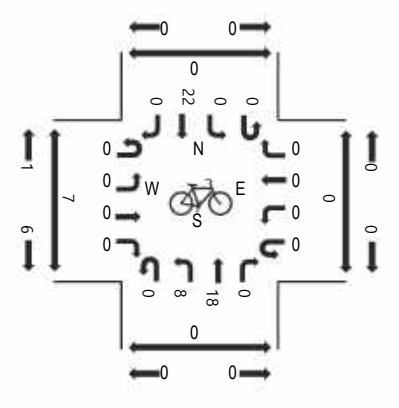
(303) 216-2439
www.alltrafficdata.net

Location: 1 RINGWOOD AVE & MENLO ATHERTON DWY AM
Date: Thursday, May 25, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

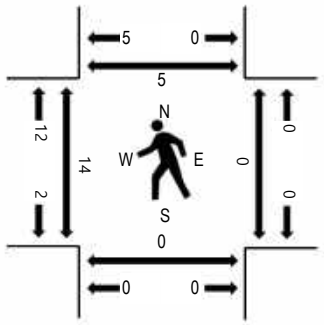
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	MENLO ATHERTON DWY Eastbound				MENLO ATHERTON DWY Westbound				RINGWOOD AVE Northbound				RINGWOOD AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	1	0	0	0	0	0	1	6	0	0	0	24	3	35	377	0	0	0	0
7:15 AM	0	1	0	1	0	0	0	0	0	0	5	0	0	0	42	6	55	577	0	0	0	0
7:30 AM	0	1	0	2	0	0	0	0	0	3	12	0	0	0	70	15	103	853	1	0	0	0
7:45 AM	0	10	0	9	0	0	0	0	0	22	36	0	0	0	81	26	184	982	0	0	0	2
8:00 AM	0	13	0	20	0	0	0	0	0	52	47	0	0	0	73	30	235	958	5	0	0	0
8:15 AM	0	22	0	34	0	0	0	0	0	77	32	0	0	0	62	104	331		8	0	0	3
8:30 AM	0	18	0	17	0	0	0	0	0	26	33	0	0	0	90	48	232		1	0	0	0
8:45 AM	0	6	0	3	0	0	0	0	0	9	29	0	0	0	99	14	160		0	0	0	1

Peak Rolling Hour Flow Rates

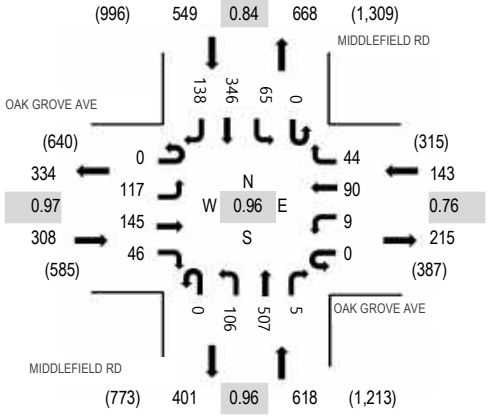
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Lights	0	62	0	80	0	0	0	0	0	176	146	0	0	0	302	208	974
Mediums	0	1	0	0	0	0	0	0	0	1	1	0	0	0	4	0	7
Total	0	63	0	80	0	0	0	0	0	177	148	0	0	0	306	208	982

ALL TRAFFIC DATA SERVICES

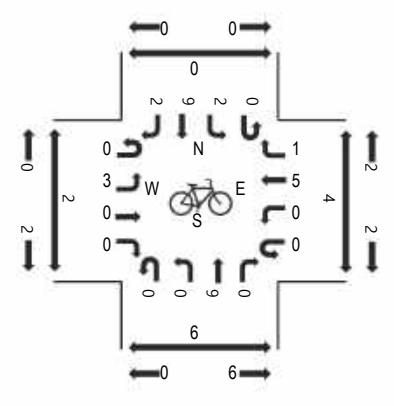
(303) 216-2439
www.alltrafficdata.net

Location: 1 MIDDLEFIELD RD & OAK GROVE AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

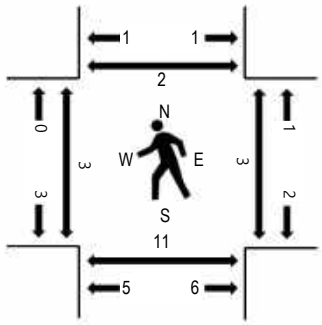
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	OAK GROVE AVE Eastbound				OAK GROVE AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	23	29	19	0	3	50	12	0	16	132	7	0	14	76	28	409	1,530	0	2	7	0
4:15 PM	0	32	32	13	0	6	25	12	0	27	99	1	0	9	70	26	352	1,544	0	0	5	1
4:30 PM	0	28	25	14	0	0	15	20	0	17	122	6	0	11	75	21	354	1,568	1	2	3	1
4:45 PM	0	29	42	8	0	2	33	19	0	25	113	2	0	23	87	32	415	1,618	2	0	8	1
5:00 PM	0	28	38	12	0	3	16	11	0	19	131	2	0	17	100	46	423	1,579	0	1	1	1
5:15 PM	0	30	27	15	0	4	16	6	0	29	128	1	0	10	84	26	376		1	2	1	0
5:30 PM	0	30	38	11	0	0	25	8	0	33	135	0	0	15	75	34	404		0	0	1	0
5:45 PM	0	21	22	19	0	0	21	8	0	35	132	1	0	15	77	25	376		0	0	0	0

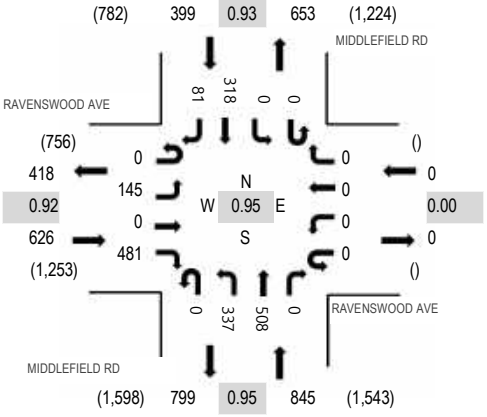
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	110	143	42	0	9	90	44	0	106	504	5	0	65	338	136	1,592
Mediums	0	6	2	4	0	0	0	0	0	0	3	0	0	0	8	2	25
Total	0	117	145	46	0	9	90	44	0	106	507	5	0	65	346	138	1,618

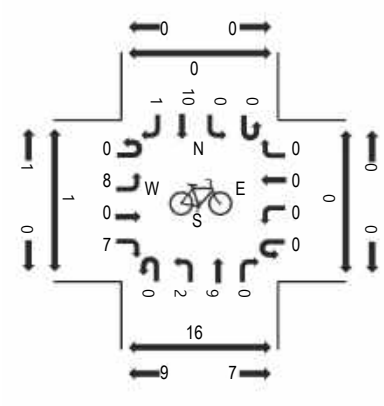
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 MIDDLEFIELD RD & RAVENSWOOD AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

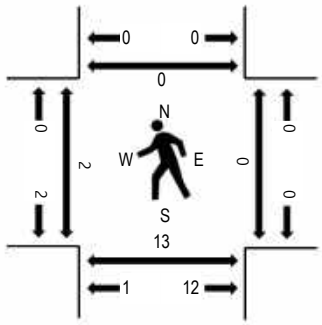
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	39	0	128	0	0	0	0	0	92	116	0	0	0	90	14	479	1,708	1	0	5	0
4:15 PM	0	36	0	115	0	0	0	0	0	63	95	0	0	0	82	12	403	1,682	0	0	2	0
4:30 PM	0	32	0	108	0	0	0	0	0	62	109	0	0	0	75	11	397	1,769	0	0	0	0
4:45 PM	0	40	0	129	0	0	0	0	0	57	104	0	0	0	72	27	429	1,838	0	0	5	0
5:00 PM	0	31	0	109	0	0	0	0	0	79	126	0	0	0	82	26	453	1,870	1	0	9	0
5:15 PM	0	42	0	133	0	0	0	0	0	84	123	0	0	0	89	19	490		1	0	2	0
5:30 PM	0	37	0	124	0	0	0	0	0	85	137	0	0	0	68	15	466		0	0	1	0
5:45 PM	0	35	0	115	0	0	0	0	0	89	122	0	0	0	79	21	461		0	0	1	0

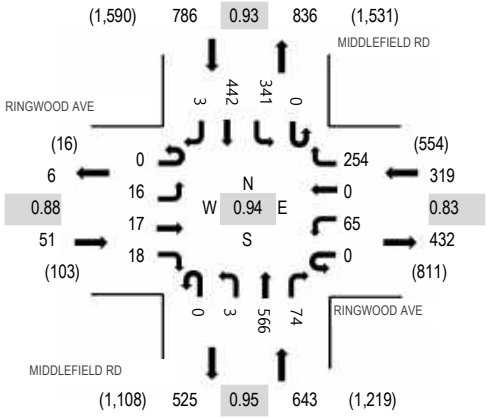
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	3
Lights	0	144	0	477	0	0	0	0	0	332	503	0	0	0	312	75	1,843
Mediums	0	1	0	4	0	0	0	0	0	3	5	0	0	0	5	6	24
Total	0	145	0	481	0	0	0	0	0	337	508	0	0	0	318	81	1,870

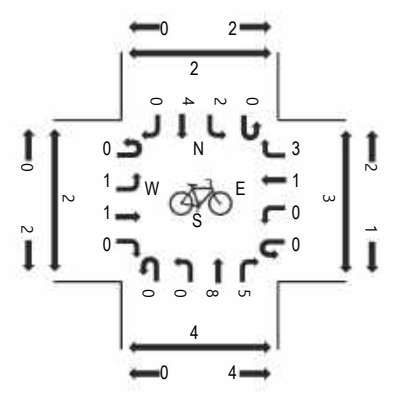
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 MIDDLEFIELD RD & RINGWOOD AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

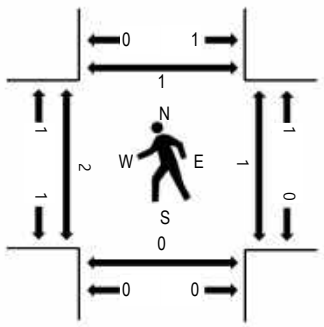
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RINGWOOD AVE Eastbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	2	8	8	0	27	1	58	0	1	130	18	0	76	129	0	458	1,667	1	1	0	1
4:15 PM	0	3	3	3	0	9	0	42	0	1	119	16	0	68	148	1	413	1,636	1	2	1	3
4:30 PM	0	1	8	6	0	10	0	42	0	2	127	15	0	74	107	2	394	1,704	0	0	0	0
4:45 PM	0	2	2	6	0	10	0	36	0	2	133	12	0	79	120	0	402	1,753	0	3	0	1
5:00 PM	0	5	6	4	0	10	0	56	0	0	145	12	0	73	116	0	427	1,799	1	0	0	1
5:15 PM	0	4	6	3	0	16	0	58	0	1	145	24	0	101	121	2	481		1	0	0	0
5:30 PM	0	3	2	6	0	14	0	69	0	2	151	12	0	85	99	0	443		0	1	0	0
5:45 PM	0	4	3	5	0	25	0	71	0	0	125	26	0	82	106	1	448		0	0	0	0

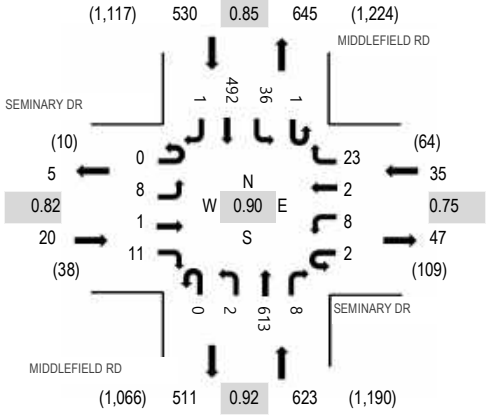
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
Lights	0	16	17	18	0	65	0	253	0	3	558	73	0	337	437	3	1,780
Mediums	0	0	0	0	0	0	0	1	0	0	6	1	0	4	4	0	16
Total	0	16	17	18	0	65	0	254	0	3	566	74	0	341	442	3	1,799

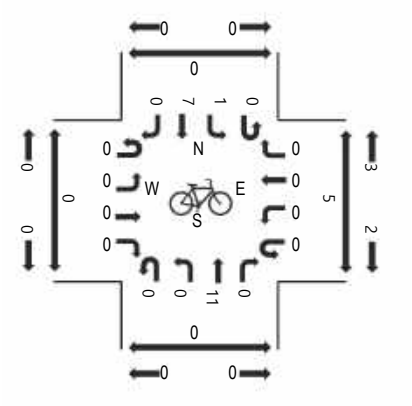
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 MIDDLEFIELD RD & SEMINARY DR PM
Date: Wednesday, May 24, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

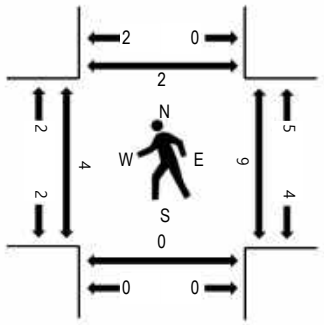
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SEMINARY DR Eastbound				SEMINARY DR Westbound				MIDDLEFIELD RD Northbound				MIDDLEFIELD RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	2	0	0	0	10	0	1	141	5	0	17	154	1	331	1,201	2	2	0	0
4:15 PM	0	2	0	4	0	2	0	4	0	0	134	4	0	14	139	0	303	1,160	0	1	0	0
4:30 PM	0	2	0	1	0	2	0	4	0	2	131	4	2	8	115	0	271	1,191	1	1	0	0
4:45 PM	0	1	0	3	0	2	0	4	0	1	149	4	0	12	120	0	296	1,208	1	1	0	0
5:00 PM	0	2	0	3	0	2	0	7	0	1	143	1	0	8	122	1	290	1,208	0	2	0	0
5:15 PM	0	3	0	3	2	1	2	7	0	0	167	2	1	7	139	0	334		3	1	0	2
5:30 PM	0	2	1	2	0	3	0	5	0	0	154	1	0	9	111	0	288		0	5	0	0
5:45 PM	0	4	0	3	1	2	0	4	0	1	141	3	0	6	131	0	296		0	1	0	0

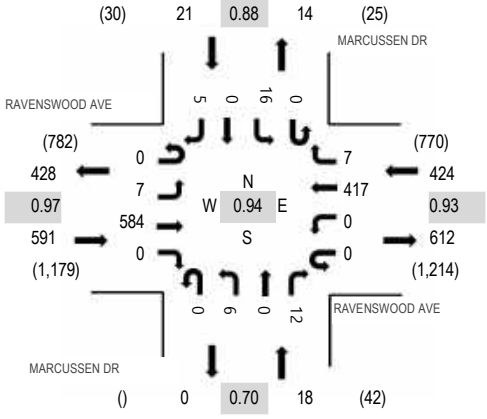
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	2	0	2	0	0	0	0	0	0	0	1	0	5
Lights	0	8	1	11	0	8	0	23	0	2	608	8	1	36	486	1	1,193
Mediums	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	10
Total	0	8	1	11	2	8	2	23	0	2	613	8	1	36	492	1	1,208

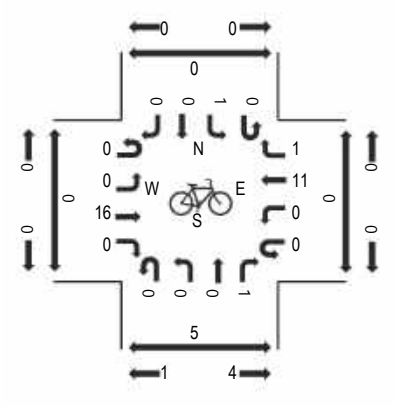
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 5 MARCUSSEN DR & RAVENSWOOD AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 05:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

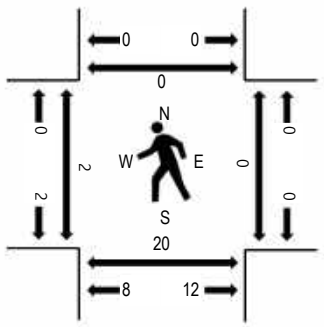
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				MARCUSSEN DR Northbound				MARCUSSEN DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	158	0	0	0	109	2	0	0	0	1	0	1	0	2	273	967	0	0	8	1
4:15 PM	0	0	134	0	0	0	79	0	0	2	0	8	0	2	0	2	227	955	0	0	4	0
4:30 PM	0	3	135	0	0	0	75	1	0	2	0	5	0	0	0	0	221	1,008	0	1	1	2
4:45 PM	0	4	154	0	0	0	79	1	0	2	0	4	0	0	0	2	246	1,053	1	0	5	0
5:00 PM	0	1	144	0	0	0	103	2	0	1	0	4	0	3	0	3	261	1,054	0	0	11	0
5:15 PM	0	3	157	0	0	0	106	2	0	2	0	4	0	4	0	2	280		2	0	4	0
5:30 PM	0	1	158	0	0	0	96	1	0	3	0	2	0	5	0	0	266		0	0	3	0
5:45 PM	0	2	125	0	0	0	112	2	0	0	0	2	0	4	0	0	247		0	0	2	0

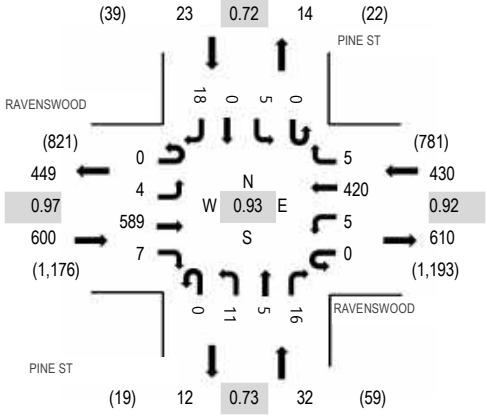
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Lights	0	7	577	0	0	0	398	7	0	6	0	12	0	16	0	5	1,028
Mediums	0	0	7	0	0	0	17	0	0	0	0	0	0	0	0	0	24
Total	0	7	584	0	0	0	417	7	0	6	0	12	0	16	0	5	1,054

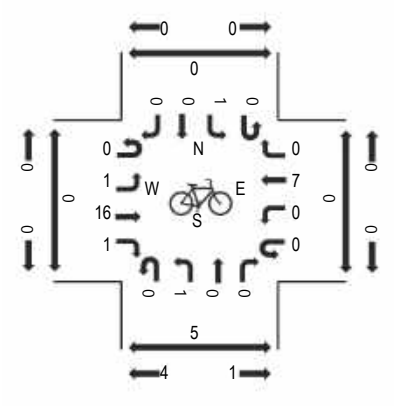
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 6 PINE ST & RAVENSWOOD PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

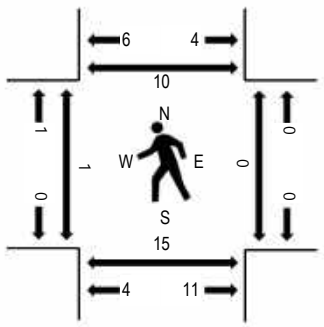
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD Eastbound				RAVENSWOOD Westbound				PINE ST Northbound				PINE ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	145	2	0	0	111	0	0	4	1	5	0	1	0	1	273	970	0	0	11	3
4:15 PM	0	1	134	0	0	0	80	0	0	2	0	3	0	2	0	3	225	973	0	0	1	0
4:30 PM	0	0	139	2	0	0	78	1	0	4	0	2	0	1	0	4	231	1,041	0	0	0	3
4:45 PM	0	1	149	0	0	3	78	0	0	3	1	2	0	0	0	4	241	1,074	0	0	2	2
5:00 PM	0	1	153	2	0	1	102	1	0	3	2	6	0	1	0	4	276	1,085	0	0	9	3
5:15 PM	0	2	158	1	0	3	108	1	0	4	2	6	0	2	0	6	293		0	0	2	4
5:30 PM	0	0	158	2	0	1	94	2	0	2	0	2	0	0	0	3	264		1	0	3	3
5:45 PM	0	1	120	2	0	0	116	1	0	2	1	2	0	2	0	5	252		0	0	1	0

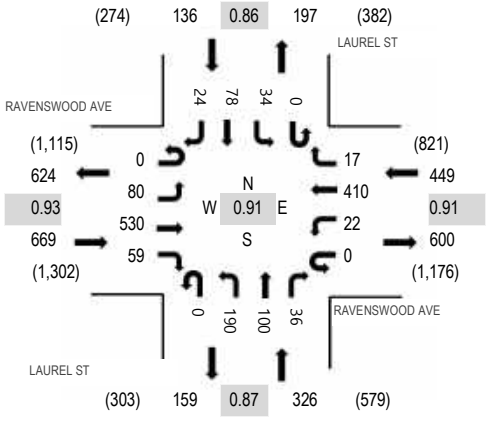
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	4	576	7	0	5	403	4	0	11	5	16	0	5	0	18	1,054
Mediums	0	0	13	0	0	0	16	1	0	0	0	0	0	0	0	0	30
Total	0	4	589	7	0	5	420	5	0	11	5	16	0	5	0	18	1,085

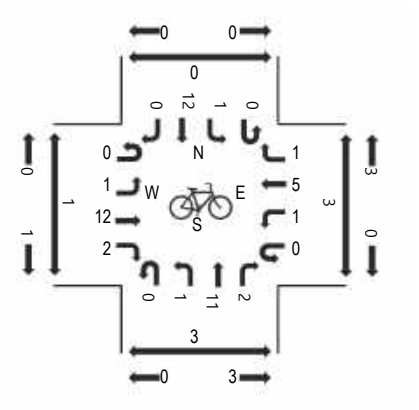
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 7 LAUREL ST & RAVENSWOOD AVE PM
Date: Wednesday, May 24, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

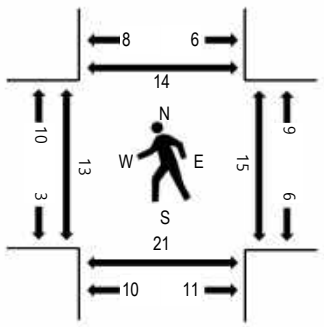
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	RAVENSWOOD AVE Eastbound				RAVENSWOOD AVE Westbound				LAUREL ST Northbound				LAUREL ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	20	132	12	0	7	105	4	0	37	40	6	0	12	20	10	405	1,396	5	3	9	3
4:15 PM	0	17	124	7	0	3	81	1	0	25	16	5	0	6	13	5	303	1,384	3	3	3	2
4:30 PM	0	16	124	17	0	4	77	5	0	28	24	5	0	12	15	2	329	1,515	2	2	1	6
4:45 PM	0	20	131	13	0	7	75	3	0	38	19	10	0	9	26	8	359	1,579	4	1	8	3
5:00 PM	0	18	138	11	0	7	99	3	0	48	26	10	0	8	18	7	393	1,580	3	6	5	4
5:15 PM	0	23	138	18	0	5	108	5	0	54	30	10	0	13	20	10	434		3	3	10	5
5:30 PM	0	25	143	19	0	5	89	5	0	48	22	8	0	9	16	4	393		4	2	2	3
5:45 PM	0	14	111	11	0	5	114	4	0	40	22	8	0	4	24	3	360		3	4	4	2

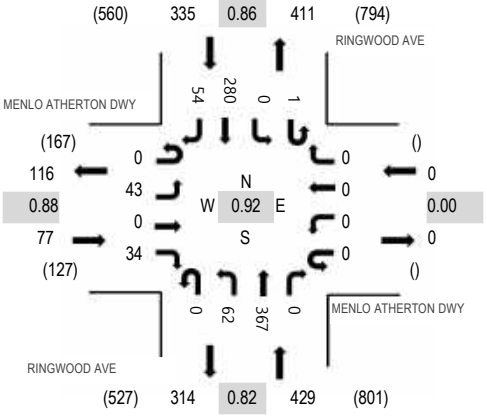
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	80	522	59	0	21	394	17	0	189	100	35	0	30	77	24	1,548
Mediums	0	0	8	0	0	1	15	0	0	1	0	1	0	4	1	0	31
Total	0	80	530	59	0	22	410	17	0	190	100	36	0	34	78	24	1,580

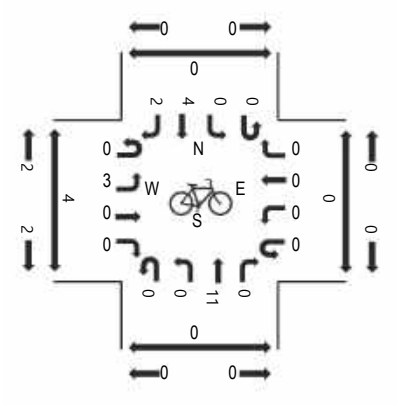
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 RINGWOOD AVE & MENLO ATHERTON DWY PM
Date: Thursday, May 25, 2023
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

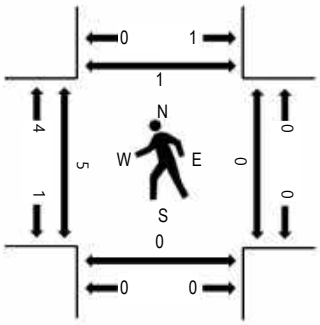
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	MENLO ATHERTON DWY Eastbound				MENLO ATHERTON DWY Westbound				RINGWOOD AVE Northbound				RINGWOOD AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	13	0	9	0	0	0	0	0	6	94	0	0	0	61	8	191	647	2	0	0	2
4:15 PM	0	10	0	3	0	0	0	0	0	3	84	0	1	0	46	7	154	639	1	0	0	0
4:30 PM	0	3	0	1	0	0	0	0	0	5	86	0	0	0	50	3	148	713	0	0	1	0
4:45 PM	0	8	0	3	0	0	0	0	0	10	84	0	0	0	40	9	154	772	1	0	0	0
5:00 PM	0	14	0	4	0	0	0	0	0	18	73	0	0	0	62	12	183	841	3	0	0	0
5:15 PM	0	9	0	10	0	0	0	0	0	18	113	0	0	0	62	16	228		0	0	0	0
5:30 PM	0	10	0	12	0	0	0	0	0	13	86	0	1	0	72	13	207		2	0	0	0
5:45 PM	0	10	0	8	0	0	0	0	0	13	95	0	0	0	84	13	223		0	0	0	1

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	43	0	34	0	0	0	0	0	62	364	0	1	0	280	54	838
Mediums	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
Total	0	43	0	34	0	0	0	0	0	62	367	0	1	0	280	54	841

Attachment B

Intersection Level of Service Calculations

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	7:30	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6762	6817	6807	6745	6777	6819	6769
Vehs Exited	6794	6882	6827	6781	6790	6990	6810
Starting Vehs	241	289	280	278	254	411	255
Ending Vehs	209	224	260	242	241	240	214
Denied Entry Before	1	0	1	2	2	1	1
Denied Entry After	0	3	2	0	1	6	2
Travel Distance (mi)	3574	3624	3642	3565	3615	3682	3541
Travel Time (hr)	266.2	272.5	269.1	278.2	274.0	307.0	258.9
Total Delay (hr)	136.7	141.3	137.5	148.8	142.9	173.3	130.7
Total Stops	9791	9933	9786	10009	9992	11214	9494
Fuel Used (gal)	155.0	157.4	157.2	157.2	157.5	167.3	151.8

Summary of All Intervals

Run Number	8	10	11	Avg
Start Time	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6786	6788	6795	6782
Vehs Exited	6814	6804	6798	6827
Starting Vehs	254	254	273	271
Ending Vehs	226	238	270	228
Denied Entry Before	1	1	1	0
Denied Entry After	1	5	3	0
Travel Distance (mi)	3552	3612	3617	3602
Travel Time (hr)	273.2	260.1	282.5	274.2
Total Delay (hr)	144.3	129.0	151.0	143.5
Total Stops	9734	9624	10334	9990
Fuel Used (gal)	156.5	154.3	159.3	157.4

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	8:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1623	1582	1573	1560	1593	1596	1625
Vehs Exited	1597	1625	1626	1598	1577	1736	1608
Starting Vehs	241	289	280	278	254	411	255
Ending Vehs	267	246	227	240	270	271	272
Denied Entry Before	1	0	1	2	2	1	1
Denied Entry After	1	1	3	1	1	3	2
Travel Distance (mi)	853	885	869	845	853	928	854
Travel Time (hr)	59.0	66.7	66.4	61.5	60.6	83.5	59.8
Total Delay (hr)	28.0	34.7	34.9	30.9	29.6	49.8	28.9
Total Stops	2193	2400	2394	2320	2227	3177	2208
Fuel Used (gal)	35.7	38.7	38.1	36.3	36.4	43.6	35.8

Interval #1 Information Recording

Start Time	8:00
End Time	8:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	10	11	Avg
Vehs Entered	1565	1541	1626	1585
Vehs Exited	1577	1553	1618	1610
Starting Vehs	254	254	273	271
Ending Vehs	242	242	281	244
Denied Entry Before	1	1	1	0
Denied Entry After	2	1	2	0
Travel Distance (mi)	855	810	879	863
Travel Time (hr)	60.5	55.3	67.7	64.1
Total Delay (hr)	29.5	25.9	35.8	32.8
Total Stops	2257	2052	2516	2370
Fuel Used (gal)	37.0	34.0	38.5	37.4

Interval #2 Information

Start Time	8:15
End Time	8:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2037	1999	1976	2034	2036	1964	1999
Vehs Exited	1946	1882	1886	1907	1944	1871	1913
Starting Vehs	267	246	227	240	270	271	272
Ending Vehs	358	363	317	367	362	364	358
Denied Entry Before	1	1	3	1	1	3	2
Denied Entry After	4	7	3	8	9	15	12
Travel Distance (mi)	1012	993	974	992	1016	963	978
Travel Time (hr)	81.1	75.2	74.9	80.9	80.0	88.7	78.9
Total Delay (hr)	44.5	39.2	39.6	45.0	43.1	53.8	43.4
Total Stops	2957	2791	2764	2896	3013	3087	2841
Fuel Used (gal)	45.2	43.0	42.6	44.1	44.8	45.8	43.6

Interval #2 Information

Start Time	8:15
End Time	8:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	10	11	Avg
Vehs Entered	2038	1972	1970	2004
Vehs Exited	1896	1879	1906	1905
Starting Vehs	242	242	281	244
Ending Vehs	384	335	345	354
Denied Entry Before	2	1	2	0
Denied Entry After	10	5	5	4
Travel Distance (mi)	963	981	988	986
Travel Time (hr)	77.2	74.9	80.3	79.2
Total Delay (hr)	42.3	39.2	44.2	43.4
Total Stops	2742	2798	2966	2887
Fuel Used (gal)	42.8	42.9	44.3	43.9

Interval #3 Information

Start Time	8:30
End Time	8:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1551	1596	1615	1549	1587	1691	1588
Vehs Exited	1665	1691	1678	1658	1683	1757	1717
Starting Vehs	358	363	317	367	362	364	358
Ending Vehs	244	268	254	258	266	298	229
Denied Entry Before	4	7	3	8	9	15	12
Denied Entry After	2	2	0	1	1	0	0
Travel Distance (mi)	866	860	897	866	894	929	896
Travel Time (hr)	68.6	69.3	65.9	75.2	74.4	77.2	66.4
Total Delay (hr)	37.3	38.1	33.6	43.7	42.1	43.5	34.0
Total Stops	2516	2524	2375	2603	2623	2803	2440
Fuel Used (gal)	39.0	38.6	38.9	40.2	40.7	42.1	38.6

Interval #3 Information

Start Time	8:30
End Time	8:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	10	11	Avg
Vehs Entered	1571	1655	1609	1595
Vehs Exited	1695	1722	1683	1696
Starting Vehs	384	335	345	354
Ending Vehs	260	268	271	256
Denied Entry Before	10	5	5	4
Denied Entry After	3	2	1	0
Travel Distance (mi)	862	927	891	889
Travel Time (hr)	74.5	68.9	74.7	71.5
Total Delay (hr)	43.1	35.2	42.2	39.3
Total Stops	2529	2552	2644	2559
Fuel Used (gal)	39.9	40.1	40.3	39.8

Interval #4 Information

Start Time	8:45
End Time	9:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1551	1640	1643	1602	1561	1568	1557
Vehs Exited	1586	1684	1637	1618	1586	1626	1572
Starting Vehs	244	268	254	258	266	298	229
Ending Vehs	209	224	260	242	241	240	214
Denied Entry Before	2	2	0	1	1	0	0
Denied Entry After	0	3	2	0	1	6	2
Travel Distance (mi)	842	886	902	863	854	862	813
Travel Time (hr)	57.4	61.4	61.9	60.6	59.0	57.5	53.8
Total Delay (hr)	26.9	29.3	29.3	29.2	28.1	26.3	24.4
Total Stops	2125	2218	2253	2190	2129	2147	2005
Fuel Used (gal)	35.1	37.2	37.7	36.6	35.7	35.9	33.8

Interval #4 Information

Start Time	8:45
End Time	9:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	10	11	Avg
Vehs Entered	1612	1620	1590	1589
Vehs Exited	1646	1650	1591	1620
Starting Vehs	260	268	271	256
Ending Vehs	226	238	270	228
Denied Entry Before	3	2	1	0
Denied Entry After	1	5	3	0
Travel Distance (mi)	871	894	858	865
Travel Time (hr)	61.1	61.0	59.8	59.4
Total Delay (hr)	29.3	28.6	28.7	28.0
Total Stops	2206	2222	2208	2168
Fuel Used (gal)	36.9	37.3	36.2	36.2

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Denied Del/Veh (s)	2.9	0.4	0.4	3.5	0.4	0.4	0.2	0.0	0.0	2.0	0.7	0.7
Total Delay (hr)	1.6	2.0	0.6	0.4	2.1	1.3	1.4	4.3	0.5	1.8	4.2	1.2
Total Del/Veh (s)	72.7	34.0	36.8	44.7	35.1	33.8	47.4	40.3	41.9	41.4	39.5	38.2
Stop Delay (hr)	1.5	1.7	0.5	0.3	1.7	1.1	1.2	3.6	0.4	1.4	3.1	0.9
Stop Del/Veh (s)	69.1	28.6	33.6	39.5	28.3	29.4	41.0	33.5	37.2	32.5	29.5	30.0
Travel Dist (mi)	20.7	56.4	14.7	5.2	39.0	24.2	20.7	74.3	8.3	57.6	141.1	40.5
Travel Time (hr)	2.4	4.0	1.1	0.6	3.4	2.2	2.1	6.8	0.8	3.9	9.0	2.6
Vehicles Entered	77	211	54	28	214	133	104	375	42	152	374	108
Vehicles Exited	78	209	54	28	212	132	104	378	41	154	378	109
Hourly Exit Rate	78	209	54	28	212	132	104	378	41	154	378	109
Input Volume	80	209	49	25	205	133	105	374	44	156	359	109
% of Volume	97	100	110	111	103	99	99	101	93	99	105	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.7
Total Delay (hr)	21.3
Total Del/Veh (s)	40.1
Stop Delay (hr)	17.5
Stop Del/Veh (s)	33.1
Travel Dist (mi)	502.7
Travel Time (hr)	39.0
Vehicles Entered	1872
Vehicles Exited	1877
Hourly Exit Rate	1877
Input Volume	1850
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.2
Denied Del/Veh (s)	1.2	0.0	1.4	0.1	0.0	0.5	0.0	0.5
Total Delay (hr)	1.1	0.0	2.0	6.1	0.4	7.9	1.8	19.4
Total Del/Veh (s)	42.9	4.4	18.6	56.8	3.6	75.8	67.5	39.0
Stop Delay (hr)	1.0	0.0	1.6	5.6	0.2	6.6	1.5	16.5
Stop Del/Veh (s)	39.0	2.5	14.2	51.6	1.7	63.3	57.3	33.1
Travel Dist (mi)	7.7	0.8	28.4	34.6	39.2	75.5	18.9	205.1
Travel Time (hr)	1.5	0.1	3.3	7.8	1.8	10.5	2.5	27.4
Vehicles Entered	92	18	390	382	427	369	92	1770
Vehicles Exited	94	18	392	381	424	368	92	1769
Hourly Exit Rate	94	18	392	381	424	368	92	1769
Input Volume	97	18	379	399	425	348	86	1752
% of Volume	97	100	103	95	100	106	107	101
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.5	0.1	0.0
Total Delay (hr)	0.1	0.1	0.0	1.6	0.3	1.2	0.6	4.7	0.6	5.5	3.9	0.2
Total Del/Veh (s)	56.9	55.1	10.4	40.5	18.7	15.3	73.3	32.3	19.7	79.4	27.7	13.3
Stop Delay (hr)	0.1	0.1	0.0	1.5	0.2	1.2	0.5	4.1	0.5	5.0	3.0	0.1
Stop Del/Veh (s)	55.0	51.9	9.8	37.8	16.5	15.2	70.7	28.3	17.5	72.5	21.5	10.4
Travel Dist (mi)	0.4	0.4	0.1	8.1	2.3	15.8	1.6	31.0	6.6	21.5	44.3	4.0
Travel Time (hr)	0.1	0.1	0.0	2.0	0.4	2.1	0.6	5.7	0.9	6.4	5.6	0.4
Vehicles Entered	8	8	2	144	54	282	26	514	108	239	498	44
Vehicles Exited	8	8	2	142	54	280	26	517	109	242	501	44
Hourly Exit Rate	8	8	2	142	54	280	26	517	109	242	501	44
Input Volume	10	10	2	136	54	298	27	513	105	227	475	42
% of Volume	82	82	100	104	100	94	96	101	104	106	105	105
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	18.7
Total Del/Veh (s)	34.5
Stop Delay (hr)	16.5
Stop Del/Veh (s)	30.4
Travel Dist (mi)	136.1
Travel Time (hr)	24.4
Vehicles Entered	1927
Vehicles Exited	1933
Hourly Exit Rate	1933
Input Volume	1899
% of Volume	102
Denied Entry Before	0
Denied Entry After	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	2.9	0.2	2.6	0.0	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.5
Total Del/Veh (s)	9.9	5.4	25.6	6.6	4.9	0.6	1.0	4.7	1.1	0.6	1.2
Stop Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	8.8	5.3	24.0	6.5	3.0	0.0	0.0	2.4	0.0	0.0	0.4
Travel Dist (mi)	0.0	0.3	0.3	1.3	3.0	116.9	1.4	2.5	70.7	1.4	197.8
Travel Time (hr)	0.0	0.0	0.1	0.1	0.1	4.1	0.1	0.1	2.6	0.1	7.2
Vehicles Entered	1	7	7	33	15	606	7	21	600	12	1309
Vehicles Exited	1	7	7	33	16	608	7	21	600	12	1312
Hourly Exit Rate	1	7	7	33	16	608	7	21	600	12	1312
Input Volume	1	5	7	33	15	604	6	21	569	10	1272
% of Volume	80	147	100	101	105	101	112	100	105	117	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1		0.1	0.1	0.1	0.0
Total Delay (hr)	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.7
Total Del/Veh (s)	6.3	1.6	1.1	0.5	10.5		11.1	30.0	14.8	2.6
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.5
Stop Del/Veh (s)	4.0	0.9	0.0	0.0	9.2		11.1	27.9	14.1	1.6
Travel Dist (mi)	0.2	22.2	33.0	0.2	0.0	0.0	0.2	4.2	4.0	64.1
Travel Time (hr)	0.0	1.0	1.3	0.0	0.0	0.0	0.0	0.4	0.3	2.9
Vehicles Entered	4	460	472	4	1	0	7	27	25	1000
Vehicles Exited	4	461	473	4	1	0	8	27	25	1003
Hourly Exit Rate	4	461	473	4	1	0	8	27	25	1003
Input Volume	5	461	480	3	2	1	7	26	22	1008
% of Volume	76	100	98	133	50	0	110	104	112	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0	0.1	4.5	0.1	0.1	0.0
Total Delay (hr)	0.0	0.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.1	1.3
Total Del/Veh (s)	6.6	2.4	1.7	9.6	5.3	4.4	26.3	5.9	16.8	17.4	4.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.6
Stop Del/Veh (s)	2.9	0.1	0.1	6.8	2.8	3.1	24.7	5.8	14.7	17.0	2.1
Travel Dist (mi)	0.2	26.6	1.5	0.7	50.0	0.1	0.4	0.4	0.9	3.1	83.9
Travel Time (hr)	0.0	1.3	0.1	0.0	2.4	0.0	0.0	0.0	0.1	0.3	4.2
Vehicles Entered	3	474	27	6	481	1	4	4	8	28	1036
Vehicles Exited	3	473	27	7	482	1	4	4	8	28	1037
Hourly Exit Rate	3	473	27	7	482	1	4	4	8	28	1037
Input Volume	3	473	25	7	485	1	4	4	10	27	1038
% of Volume	92	100	109	104	99	100	107	107	78	105	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.4	1.4	1.2	0.3	0.2	0.0	0.3	0.1	0.0	3.8	0.4	0.4
Total Delay (hr)	0.2	3.7	0.6	0.2	3.0	0.1	1.7	0.7	0.2	0.9	1.3	0.6
Total Del/Veh (s)	36.0	31.6	30.0	36.4	22.6	18.6	37.0	29.5	34.0	36.6	38.7	34.5
Stop Delay (hr)	0.2	2.9	0.5	0.2	2.4	0.1	1.6	0.6	0.2	0.8	1.1	0.5
Stop Del/Veh (s)	29.5	24.3	24.4	32.4	18.0	16.1	34.2	26.4	32.5	33.1	33.6	32.0
Travel Dist (mi)	1.6	32.8	5.4	0.9	25.9	0.7	22.5	11.1	2.3	15.4	21.7	11.1
Travel Time (hr)	0.3	5.0	0.8	0.2	3.9	0.1	2.6	1.1	0.3	1.5	2.0	1.0
Vehicles Entered	20	420	67	17	479	13	158	87	16	81	115	58
Vehicles Exited	20	421	68	17	477	13	161	86	16	82	114	59
Hourly Exit Rate	20	421	68	17	477	13	161	86	16	82	114	59
Input Volume	21	423	68	17	479	13	159	93	17	78	113	55
% of Volume	96	100	100	100	100	102	101	92	94	105	101	108
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	13.0
Total Del/Veh (s)	30.2
Stop Delay (hr)	10.9
Stop Del/Veh (s)	25.2
Travel Dist (mi)	151.5
Travel Time (hr)	18.7
Vehicles Entered	1531
Vehicles Exited	1534
Hourly Exit Rate	1534
Input Volume	1534
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.2	0.2	0.1	0.4	0.1	0.0	0.3	1.3
Denied Del/Veh (s)	3.5	4.0	1.4	3.3	5.3	0.0	7.5	3.5
Total Delay (hr)	2.1	1.4	0.2	0.3	0.3	0.0	0.4	4.8
Total Del/Veh (s)	38.4	28.9	2.2	3.1	21.6	1.7	9.1	13.1
Stop Delay (hr)	2.0	1.2	0.0	0.1	0.3	0.0	0.4	4.1
Stop Del/Veh (s)	36.2	25.7	0.2	1.2	21.0	0.8	9.6	11.3
Travel Dist (mi)	12.0	10.2	26.5	34.4	1.1	0.3	2.6	87.1
Travel Time (hr)	2.9	2.1	1.2	2.2	0.5	0.0	0.8	9.7
Vehicles Entered	198	173	307	399	58	25	143	1303
Vehicles Exited	198	172	307	399	58	25	143	1302
Hourly Exit Rate	198	172	307	399	58	25	143	1302
Input Volume	192	162	308	400	63	26	148	1298
% of Volume	103	106	100	100	92	98	97	100
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	5.4	1.7	7.1
Total Del/Veh (s)	24.4	8.5	16.9
Stop Delay (hr)	4.7	1.5	6.2
Stop Del/Veh (s)	21.2	7.4	14.7
Travel Dist (mi)	61.3	17.1	78.4
Travel Time (hr)	8.2	2.4	10.6
Vehicles Entered	790	706	1496
Vehicles Exited	792	706	1498
Hourly Exit Rate	792	706	1498
Input Volume	786	704	1490
% of Volume	101	100	101
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0
Denied Del/Veh (s)	0.8	1.9	3.6	0.0	0.0	0.0	2.3	0.2	0.3	2.6	0.3	2.5
Total Delay (hr)	1.5	6.0	1.0	8.0	3.6	0.3	2.0	6.9	1.6	2.5	8.4	0.1
Total Del/Veh (s)	82.3	76.5	54.0	63.1	61.8	17.2	69.8	29.1	13.8	82.6	31.1	15.3
Stop Delay (hr)	1.4	5.4	0.9	7.3	3.3	0.2	1.9	5.6	1.3	2.3	6.8	0.1
Stop Del/Veh (s)	76.5	69.2	49.7	58.1	56.0	14.7	65.5	23.8	11.3	76.8	25.1	12.0
Travel Dist (mi)	6.3	27.6	6.7	33.4	15.4	4.0	15.6	125.2	60.5	12.8	113.0	2.2
Travel Time (hr)	1.7	7.0	1.4	9.3	4.1	0.4	2.7	11.2	3.9	3.0	12.3	0.2
Vehicles Entered	63	277	67	447	206	53	104	830	403	108	949	18
Vehicles Exited	64	278	68	450	208	54	104	835	404	108	946	18
Hourly Exit Rate	64	278	68	450	208	54	104	835	404	108	946	18
Input Volume	64	271	68	448	205	51	104	844	407	108	936	18
% of Volume	100	103	100	100	101	105	100	99	99	100	101	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.5
Denied Del/Veh (s)	0.6
Total Delay (hr)	41.7
Total Del/Veh (s)	41.8
Stop Delay (hr)	36.5
Stop Del/Veh (s)	36.5
Travel Dist (mi)	422.5
Travel Time (hr)	57.3
Vehicles Entered	3525
Vehicles Exited	3537
Hourly Exit Rate	3537
Input Volume	3524
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.2
Total Delay (hr)	0.7	0.5	1.2
Total Del/Veh (s)	4.2	8.6	5.3
Stop Delay (hr)	0.6	0.4	0.9
Stop Del/Veh (s)	3.2	6.8	4.0
Travel Dist (mi)	12.4	34.3	46.7
Travel Time (hr)	1.6	1.7	3.3
Vehicles Entered	629	204	833
Vehicles Exited	629	203	832
Hourly Exit Rate	629	203	832
Input Volume	624	211	834
% of Volume	101	96	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.0	0.2	0.5
Total Del/Veh (s)	1.9	1.6	5.1	1.6	1.8
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	0.3	0.6	2.9	0.3	0.4
Travel Dist (mi)	49.5	4.0	1.3	25.5	80.3
Travel Time (hr)	1.9	0.2	0.1	1.1	3.3
Vehicles Entered	463	37	24	473	997
Vehicles Exited	464	37	24	473	998
Hourly Exit Rate	464	37	24	473	998
Input Volume	464	35	25	477	1001
% of Volume	100	106	97	99	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.4	0.8	0.0	0.0	0.1	0.1	0.2
Total Delay (hr)	0.7	0.0	0.0	0.2	0.0	0.0	1.0
Total Del/Veh (s)	5.3	3.5	5.1	1.8	9.1	17.2	3.7
Stop Delay (hr)	0.5	0.0	0.0	0.0	0.0	0.0	0.6
Stop Del/Veh (s)	4.0	2.6	2.3	0.2	8.1	17.1	2.3
Travel Dist (mi)	34.3	0.6	0.7	40.7	0.0	0.2	76.6
Travel Time (hr)	2.0	0.0	0.0	1.9	0.0	0.1	4.0
Vehicles Entered	492	9	8	473	2	8	992
Vehicles Exited	495	9	8	478	2	8	1000
Hourly Exit Rate	495	9	8	478	2	8	1000
Input Volume	490	7	8	485	2	7	1000
% of Volume	101	124	97	99	100	110	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.0	0.1	0.1	0.1
Total Delay (hr)	0.4	0.1	3.2	0.1	0.0	0.4	4.2
Total Del/Veh (s)	2.8	1.6	16.7	11.5	7.8	31.0	9.7
Stop Delay (hr)	0.2	0.0	2.7	0.1	0.0	0.4	3.4
Stop Del/Veh (s)	1.4	0.3	14.3	10.3	7.5	30.5	7.9
Travel Dist (mi)	11.8	7.9	37.3	1.2	0.6	2.2	61.0
Travel Time (hr)	0.8	0.6	4.8	0.1	0.1	0.5	6.9
Vehicles Entered	473	319	686	22	14	44	1558
Vehicles Exited	474	319	685	22	14	44	1558
Hourly Exit Rate	474	319	685	22	14	44	1558
Input Volume	477	309	683	23	14	45	1551
% of Volume	99	103	100	97	98	97	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)	6.0	0.1	0.1	3.7	1.6	0.8
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	5.3	0.0	0.0	1.1	0.2	0.1
Travel Dist (mi)	0.0	16.5	0.1	0.1	29.2	45.9
Travel Time (hr)	0.0	0.6	0.0	0.0	1.1	1.7
Vehicles Entered	1	244	1	1	203	450
Vehicles Exited	1	245	1	1	203	451
Hourly Exit Rate	1	245	1	1	203	451
Input Volume	1	251	1	1	201	456
% of Volume	100	98	100	100	101	99
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

44: Laurel St Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.0	2.3	0.2	0.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.0	0.4	0.0	0.0
Travel Dist (mi)	7.2	0.0	0.1	13.2	20.5
Travel Time (hr)	0.3	0.0	0.0	0.5	0.7
Vehicles Entered	246	1	1	199	447
Vehicles Exited	246	1	1	199	447
Hourly Exit Rate	246	1	1	199	447
Input Volume	252	1	1	197	451
% of Volume	98	100	100	101	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	3.0
Denied Del/Veh (s)	1.6
Total Delay (hr)	140.5
Total Del/Veh (s)	71.7
Stop Delay (hr)	115.0
Stop Del/Veh (s)	58.7
Travel Dist (mi)	3602.4
Travel Time (hr)	274.2
Vehicles Entered	6782
Vehicles Exited	6827
Hourly Exit Rate	6827
Input Volume	30792
% of Volume	22
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Seminary Dr	4	0.6	24.0	0.2	30
	20	1.4	15.7	0.1	27
Ringwood Ave	3	32.3	39.6	0.1	6
Ravenswood Ave	2	2.8	14.1	0.1	24
	1	45.2	68.4	0.2	11
Total		82.3	161.7	0.7	15

Arterial Level of Service: SB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Ravenswood Ave	2	74.2	99.3	0.2	8
	3	20.3	30.9	0.1	11
	20	1.4	9.2	0.1	24
	4	1.1	15.3	0.1	28
Total		97.0	154.7	0.5	11

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	226	397	73	432	149	466	160	704
Average Queue (ft)	78	160	24	209	93	260	103	318
95th Queue (ft)	176	304	65	356	179	426	190	635
Link Distance (ft)		1416		961		1022		1985
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	1	3	4	45	2	39	1	30
Queuing Penalty (veh)	3	3	12	12	6	41	6	47

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	398	170	439	377	788
Average Queue (ft)	149	90	301	53	344
95th Queue (ft)	370	220	455	245	805
Link Distance (ft)	391		420	420	1022
Upstream Blk Time (%)	5		4	1	1
Queuing Penalty (veh)	22		18	4	6
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	12	8			
Queuing Penalty (veh)	47	8			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	SB	SB
Directions Served	L	TR	LT	R	L	T	T	R	T	T	L	T
Maximum Queue (ft)	50	54	219	226	123	271	332	150	58	103	175	434
Average Queue (ft)	10	10	116	96	29	117	196	73	3	8	156	250
95th Queue (ft)	36	39	192	179	86	242	322	174	42	70	203	443
Link Distance (ft)	255	255	257	257		260	260		565	565		420
Upstream Blk Time (%)			0	0		1	5					5
Queuing Penalty (veh)			0	0		4	16					20
Storage Bay Dist (ft)					175			100			125	
Storage Blk Time (%)					0	3	29	2			39	7
Queuing Penalty (veh)					0	1	30	6			91	17

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	507
Average Queue (ft)	177
95th Queue (ft)	512
Link Distance (ft)	420
Upstream Blk Time (%)	11
Queuing Penalty (veh)	45
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	WB	NB	NB	SB	SB	B20
Directions Served	LTR	LTR	L	R	L	TR	T
Maximum Queue (ft)	32	64	32	3	29	3	36
Average Queue (ft)	7	20	6	0	8	0	1
95th Queue (ft)	27	48	26	2	28	2	36
Link Distance (ft)	274	195				565	260
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			50	85	80		
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	117	52	16	32	95
Average Queue (ft)	10	2	1	7	32
95th Queue (ft)	74	23	9	28	83
Link Distance (ft)	218	313	150	150	834
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	2				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	LT	R	LTR
Maximum Queue (ft)	57	227	34	28	72
Average Queue (ft)	3	56	4	4	25
95th Queue (ft)	34	168	21	19	60
Link Distance (ft)	232	517	525		577
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				75	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T	L	TR	L	TR	L	TR
Maximum Queue (ft)	107	458	146	72	251	119	264	134	234
Average Queue (ft)	21	258	16	17	184	88	82	64	109
95th Queue (ft)	72	502	86	56	302	137	196	130	191
Link Distance (ft)		344	209		232		719		997
Upstream Blk Time (%)		8	0		10				
Queuing Penalty (veh)		41	0		51				
Storage Bay Dist (ft)	85			70		95		110	
Storage Blk Time (%)	0	31		0	33	17	3	2	11
Queuing Penalty (veh)	0	7		0	6	17	5	2	8

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	274	135	128	99
Average Queue (ft)	186	8	31	58
95th Queue (ft)	311	85	95	93
Link Distance (ft)	257	454		66
Upstream Blk Time (%)	8	0		14
Queuing Penalty (veh)	32	0		31
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		0	1	
Queuing Penalty (veh)		0	3	

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	337	352	79	77
Average Queue (ft)	162	140	43	40
95th Queue (ft)	369	367	100	96
Link Distance (ft)	318	318	67	67
Upstream Blk Time (%)	3	5	24	19
Queuing Penalty (veh)	12	20	83	67
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	422	250	300	342	325	160	282	409	383	316	264	476
Average Queue (ft)	221	170	181	201	171	53	102	256	223	114	134	300
95th Queue (ft)	392	270	325	348	326	161	210	370	331	245	264	429
Link Distance (ft)	515			318	318			792	792	792		621
Upstream Blk Time (%)	1		0	3	3					0		
Queuing Penalty (veh)	0		0	10	11					0		
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	12	3	1	6	22	0	0	2			0	16
Queuing Penalty (veh)	25	6	3	14	11	0	0	2			1	17

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	441	94
Average Queue (ft)	258	9
95th Queue (ft)	384	50
Link Distance (ft)	621	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)	33	0
Queuing Penalty (veh)	6	0

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	99	151
Average Queue (ft)	69	25
95th Queue (ft)	87	108
Link Distance (ft)	66	887
Upstream Blk Time (%)	7	
Queuing Penalty (veh)	43	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB
Directions Served	TR	LT
Maximum Queue (ft)	53	168
Average Queue (ft)	3	22
95th Queue (ft)	52	98
Link Distance (ft)	517	218
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 36: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	230	141	37
Average Queue (ft)	27	8	8
95th Queue (ft)	161	65	31
Link Distance (ft)	313	391	141
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	5		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	WB	B27	NB	SB
Directions Served	T	TR	T	TR	T	R	R
Maximum Queue (ft)	106	91	308	289	236	34	88
Average Queue (ft)	43	10	148	85	23	12	32
95th Queue (ft)	101	50	311	221	126	35	71
Link Distance (ft)	67	67	209	209	344	222	259
Upstream Blk Time (%)	5	1	9	2	0		
Queuing Penalty (veh)	20	2	32	8	0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 42: Laurel St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	21	8
Average Queue (ft)	1	0
95th Queue (ft)	9	7
Link Distance (ft)	69	719
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Laurel St

Movement	SB
Directions Served	LT
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	4
Link Distance (ft)	297
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1069

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	12.1	52.7	48.4	7.2	57.6	48.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	None	Max	None
Avg. Green (s)	9.3	6.8	-1.0	6.8	9.6	-1.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	8	0	0	15	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	23	100	100	56	100	100	0
Cycles with Peds (%)	0	31	96	0	12	12	0

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	2	3	5	6	7	8
Movement(s) Served	NBT	EBR	NBL	SBT	EBL	NBTL
Maximum Green (s)	50.5	70.5	5.1	40.9	33.0	33.0
Minimum Green (s)	10.0	8.0	5.0	7.0	7.0	7.0
Recall	C-Max	Min	None	C-Max	Max	None
Avg. Green (s)	0.1	-5.1	5.2	-6.0	10.1	7.2
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	32	0	0	0
Cycles @ Minimum (%)	0	0	40	0	0	0
Cycles Maxed Out (%)	100	100	28	100	100	88
Cycles with Peds (%)	96	0	0	19	93	42

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	4.9	39.5	23.8	4.9	39.5	23.2
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Max	C-Max	None	Max	Max
Avg. Green (s)	4.9	5.5	3.3	6.0	5.8	2.7
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	82	0	0	86	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	18	100	100	14	100	100
Cycles with Peds (%)	0	39	9	0	19	19

Controller Summary
Average Cycle Length (s): -7.0
Number of Complete Cycles : 28

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	Max	Max	None	C-Max
Avg. Green (s)	-12.4	0.4	-4.3	0.7	13.6	5.7
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	8	0
Cycles @ Minimum (%)	0	0	0	0	12	0
Cycles Maxed Out (%)	100	100	100	100	8	100
Cycles with Peds (%)	0	50	0	75	0	29

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:30	4:30	4:30	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6444	6533	6456	6517	6481	6430	6606
Vehs Exited	6488	6534	6473	6551	6501	6485	6628
Starting Vehs	294	252	308	282	266	288	283
Ending Vehs	250	251	291	248	246	233	261
Denied Entry Before	1	1	2	2	2	1	0
Denied Entry After	1	1	2	2	0	2	2
Travel Distance (mi)	3540	3562	3547	3587	3559	3611	3657
Travel Time (hr)	250.7	260.1	255.4	261.0	256.3	268.9	267.6
Total Delay (hr)	123.4	131.9	127.8	131.9	128.2	138.8	136.1
Total Stops	8519	8824	8552	8799	8775	9245	9159
Fuel Used (gal)	150.2	152.8	152.1	153.6	152.0	156.6	156.9

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6417	6392	6625	6483
Vehs Exited	6447	6412	6667	6520
Starting Vehs	296	266	270	271
Ending Vehs	266	246	228	247
Denied Entry Before	1	1	1	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	3521	3509	3659	3575
Travel Time (hr)	258.9	253.0	298.5	263.0
Total Delay (hr)	132.2	126.7	166.8	134.4
Total Stops	8796	8719	9985	8932
Fuel Used (gal)	151.5	149.5	165.1	154.0

Interval #0 Information Seeding

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1522	1553	1535	1541	1561	1527	1573
Vehs Exited	1596	1553	1597	1555	1572	1539	1584
Starting Vehs	294	252	308	282	266	288	283
Ending Vehs	220	252	246	268	255	276	272
Denied Entry Before	1	1	2	2	2	1	0
Denied Entry After	3	1	0	2	1	0	0
Travel Distance (mi)	892	849	875	866	870	870	887
Travel Time (hr)	64.3	60.9	63.7	63.2	64.3	65.7	64.0
Total Delay (hr)	32.2	30.2	32.2	32.1	32.8	34.2	32.2
Total Stops	2171	2049	2138	2164	2285	2249	2222
Fuel Used (gal)	38.3	35.7	37.8	37.2	37.6	38.1	38.0

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1523	1523	1644	1548
Vehs Exited	1563	1542	1619	1571
Starting Vehs	296	266	270	271
Ending Vehs	256	247	295	252
Denied Entry Before	1	1	1	0
Denied Entry After	1	2	2	0
Travel Distance (mi)	860	852	911	873
Travel Time (hr)	59.5	59.6	68.1	63.3
Total Delay (hr)	28.6	28.8	35.4	31.9
Total Stops	2030	2019	2382	2169
Fuel Used (gal)	36.2	35.7	39.5	37.4

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1876	1824	1781	1817	1863	1815	1821
Vehs Exited	1836	1741	1717	1761	1799	1780	1790
Starting Vehs	220	252	246	268	255	276	272
Ending Vehs	260	335	310	324	319	311	303
Denied Entry Before	3	1	0	2	1	0	0
Denied Entry After	2	2	1	0	1	4	0
Travel Distance (mi)	980	945	936	954	969	981	970
Travel Time (hr)	70.7	70.6	67.5	71.1	69.5	77.2	75.0
Total Delay (hr)	35.4	36.8	33.9	36.8	34.6	42.0	40.0
Total Stops	2407	2433	2274	2380	2364	2782	2599
Fuel Used (gal)	42.0	41.2	40.1	41.0	41.5	43.6	42.6

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	1845	1774	1854	1822
Vehs Exited	1745	1705	1765	1764
Starting Vehs	256	247	295	252
Ending Vehs	356	316	384	312
Denied Entry Before	1	2	2	0
Denied Entry After	1	2	3	0
Travel Distance (mi)	973	928	982	962
Travel Time (hr)	77.1	67.5	94.9	74.1
Total Delay (hr)	42.1	34.2	59.5	39.5
Total Stops	2672	2400	2931	2521
Fuel Used (gal)	42.8	39.7	47.7	42.2

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1514	1560	1530	1570	1549	1553	1614
Vehs Exited	1551	1647	1586	1625	1603	1600	1651
Starting Vehs	260	335	310	324	319	311	303
Ending Vehs	223	248	254	269	265	264	266
Denied Entry Before	2	2	1	0	1	4	0
Denied Entry After	1	1	2	3	1	3	0
Travel Distance (mi)	841	881	860	891	856	891	893
Travel Time (hr)	59.1	65.4	60.9	65.3	60.2	66.1	64.4
Total Delay (hr)	28.9	33.7	29.9	33.2	29.4	33.9	32.2
Total Stops	2000	2193	1982	2220	2034	2213	2189
Fuel Used (gal)	35.7	38.3	36.7	38.4	36.0	38.5	38.0

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1544	1526	1550	1546
Vehs Exited	1642	1599	1700	1618
Starting Vehs	356	316	384	312
Ending Vehs	258	243	234	245
Denied Entry Before	1	2	3	0
Denied Entry After	1	2	2	0
Travel Distance (mi)	876	859	906	875
Travel Time (hr)	66.3	64.1	73.0	64.5
Total Delay (hr)	34.7	33.2	40.5	33.0
Total Stops	2260	2189	2532	2176
Fuel Used (gal)	38.3	37.3	41.2	37.8

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1532	1596	1610	1589	1508	1535	1598
Vehs Exited	1505	1593	1573	1610	1527	1566	1603
Starting Vehs	223	248	254	269	265	264	266
Ending Vehs	250	251	291	248	246	233	261
Denied Entry Before	1	1	2	3	1	3	0
Denied Entry After	1	1	2	2	0	2	2
Travel Distance (mi)	827	887	877	876	863	869	907
Travel Time (hr)	56.6	63.2	63.4	61.4	62.4	60.0	64.1
Total Delay (hr)	26.9	31.3	31.8	29.9	31.3	28.7	31.6
Total Stops	1941	2149	2158	2035	2092	2001	2149
Fuel Used (gal)	34.2	37.6	37.4	37.0	36.8	36.4	38.3

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1505	1569	1577	1561
Vehs Exited	1497	1566	1583	1562
Starting Vehs	258	243	234	245
Ending Vehs	266	246	228	247
Denied Entry Before	1	2	2	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	812	870	861	865
Travel Time (hr)	55.9	61.8	62.4	61.1
Total Delay (hr)	26.8	30.5	31.4	30.0
Total Stops	1834	2111	2140	2056
Fuel Used (gal)	34.1	36.8	36.7	36.5

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.0	0.4	0.4	4.1	0.2	0.2	0.0	0.0	0.0	1.9	0.5	0.5
Total Delay (hr)	0.9	1.0	0.4	0.1	0.6	0.3	1.2	4.0	0.0	0.7	3.8	1.4
Total Del/Veh (s)	30.8	25.4	26.3	35.8	24.0	25.8	39.1	26.4	34.4	38.6	38.4	37.1
Stop Delay (hr)	0.8	0.9	0.3	0.1	0.5	0.3	1.0	3.0	0.0	0.5	2.8	1.1
Stop Del/Veh (s)	27.8	21.3	24.5	32.6	20.3	24.1	33.1	20.3	29.3	30.7	28.9	29.7
Travel Dist (mi)	28.6	38.9	13.1	1.5	16.5	8.3	22.6	108.7	1.1	23.4	131.3	50.8
Travel Time (hr)	2.0	2.4	0.8	0.1	1.2	0.6	2.1	7.7	0.1	1.5	8.2	3.2
Vehicles Entered	106	145	49	8	90	45	111	533	5	62	349	135
Vehicles Exited	108	146	49	8	92	46	111	531	5	62	347	133
Hourly Exit Rate	108	146	49	8	92	46	111	531	5	62	347	133
Input Volume	117	145	46	9	90	44	106	536	5	65	348	138
% of Volume	92	101	106	89	102	105	104	99	100	95	100	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.5
Total Delay (hr)	14.5
Total Del/Veh (s)	31.2
Stop Delay (hr)	11.6
Stop Del/Veh (s)	25.0
Travel Dist (mi)	444.8
Travel Time (hr)	30.0
Vehicles Entered	1638
Vehicles Exited	1638
Hourly Exit Rate	1638
Input Volume	1649
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	2.0	1.5	5.0	0.9	5.3	1.3	16.0
Total Del/Veh (s)	48.1	10.8	51.7	6.5	57.1	52.4	30.0
Stop Delay (hr)	1.8	0.7	4.5	0.6	4.5	1.1	13.1
Stop Del/Veh (s)	42.9	5.2	46.5	4.0	47.7	45.0	24.5
Travel Dist (mi)	12.7	35.9	30.6	47.1	65.8	17.3	209.5
Travel Time (hr)	2.5	2.8	6.4	2.6	7.6	1.9	23.8
Vehicles Entered	150	485	338	512	330	86	1901
Vehicles Exited	146	488	341	509	333	86	1903
Hourly Exit Rate	146	488	341	509	333	86	1903
Input Volume	149	489	347	504	330	83	1902
% of Volume	98	100	98	101	101	104	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.2	0.1	0.0	0.7	0.0	0.9	0.0	4.6	0.3	5.6	1.9	0.0
Total Del/Veh (s)	38.2	30.7	7.2	37.4	0.4	12.9	68.7	28.5	14.1	57.7	14.6	13.9
Stop Delay (hr)	0.2	0.1	0.0	0.7	0.0	0.9	0.0	3.9	0.2	4.8	1.2	0.0
Stop Del/Veh (s)	36.4	28.3	6.7	35.3	0.0	12.3	65.6	24.3	11.7	49.2	9.2	9.6
Travel Dist (mi)	0.7	0.8	0.8	3.9	0.2	14.7	0.1	34.8	4.5	31.2	42.7	0.3
Travel Time (hr)	0.2	0.2	0.1	0.9	0.0	1.6	0.0	5.8	0.5	7.0	3.6	0.0
Vehicles Entered	15	16	17	67	5	252	2	578	73	341	467	3
Vehicles Exited	15	16	18	67	5	251	2	580	74	340	466	3
Hourly Exit Rate	15	16	18	67	5	251	2	580	74	340	466	3
Input Volume	16	17	18	65	3	255	3	578	74	344	463	3
% of Volume	95	96	101	103	167	98	67	100	100	99	101	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	14.4
Total Del/Veh (s)	28.0
Stop Delay (hr)	12.1
Stop Del/Veh (s)	23.4
Travel Dist (mi)	134.8
Travel Time (hr)	20.0
Vehicles Entered	1836
Vehicles Exited	1837
Hourly Exit Rate	1837
Input Volume	1838
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.1	3.2	0.2	2.7	0.1	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Total Del/Veh (s)	19.2	19.3	6.7	17.4	12.7	5.6	6.6	0.5	0.7	5.1	1.0	0.5
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	17.4	15.0	6.5	15.9	9.6	5.5	3.9	0.0	0.0	2.8	0.0	0.0
Travel Dist (mi)	0.4	0.1	0.6	0.3	0.1	0.9	0.3	118.5	1.7	4.0	60.8	0.2
Travel Time (hr)	0.1	0.0	0.1	0.1	0.0	0.1	0.0	4.1	0.1	0.2	2.2	0.0
Vehicles Entered	8	1	12	9	2	22	1	614	9	34	524	2
Vehicles Exited	8	1	12	9	2	22	1	616	9	34	522	2
Hourly Exit Rate	8	1	12	9	2	22	1	616	9	34	522	2
Input Volume	8	1	11	10	2	23	2	616	8	37	519	1
% of Volume	103	100	112	90	89	97	50	100	109	91	101	200
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	0.5
Total Del/Veh (s)	1.3
Stop Delay (hr)	0.2
Stop Del/Veh (s)	0.5
Travel Dist (mi)	187.7
Travel Time (hr)	6.9
Vehicles Entered	1238
Vehicles Exited	1238
Hourly Exit Rate	1238
Input Volume	1238
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	4.2	0.2	0.1	0.1	0.0
Total Delay (hr)	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.4
Total Del/Veh (s)	4.3	0.9	0.9	0.5	18.3	7.4	16.6	7.0	1.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Stop Del/Veh (s)	2.3	0.1	0.0	0.0	16.6	7.1	14.7	6.5	0.5
Travel Dist (mi)	0.4	29.7	29.9	0.5	0.3	0.6	2.3	1.0	64.7
Travel Time (hr)	0.0	1.2	1.1	0.0	0.1	0.1	0.2	0.0	2.6
Vehicles Entered	8	607	426	8	7	13	15	6	1090
Vehicles Exited	8	607	425	8	7	13	15	6	1089
Hourly Exit Rate	8	607	425	8	7	13	15	6	1089
Input Volume	7	613	430	7	8	12	16	5	1098
% of Volume	114	99	99	110	85	106	95	114	99
Denied Entry Before	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	4.1	0.1	0.1	0.1
Total Delay (hr)	0.0	0.4	0.0	0.0	1.3	0.0	0.1	0.0	0.0	0.0	0.1	2.1
Total Del/Veh (s)	5.6	2.2	1.3	10.0	11.0	11.0	46.7	25.0	9.1	20.8	24.3	6.8
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.9	0.0	0.1	0.0	0.0	0.0	0.1	1.3
Stop Del/Veh (s)	2.8	0.1	0.0	7.6	7.6	9.4	44.8	21.9	8.4	18.8	24.0	4.2
Travel Dist (mi)	0.2	33.5	0.4	0.5	45.5	0.6	1.0	0.5	1.7	0.6	2.0	86.5
Travel Time (hr)	0.0	1.5	0.0	0.0	2.8	0.0	0.2	0.1	0.1	0.1	0.2	5.1
Vehicles Entered	4	597	8	5	424	6	10	5	17	5	18	1099
Vehicles Exited	4	597	8	4	422	6	10	5	17	5	18	1096
Hourly Exit Rate	4	597	8	4	422	6	10	5	17	5	18	1096
Input Volume	4	604	7	5	431	5	11	5	16	5	18	1111
% of Volume	100	99	114	80	98	120	89	105	106	105	99	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.3	0.2	0.0	0.0	0.0	0.1	0.0	0.0	3.9	0.3	0.3
Total Delay (hr)	1.5	7.6	0.8	0.4	4.0	0.1	2.9	1.5	0.6	0.5	1.5	0.4
Total Del/Veh (s)	65.0	50.3	44.8	59.6	34.1	29.6	54.3	48.9	53.5	55.4	61.1	57.9
Stop Delay (hr)	1.3	6.2	0.6	0.4	3.4	0.1	2.7	1.3	0.6	0.5	1.4	0.4
Stop Del/Veh (s)	57.2	41.4	37.9	55.4	29.1	26.7	49.9	44.0	50.4	51.9	56.6	55.4
Travel Dist (mi)	6.6	43.3	4.9	1.2	22.7	0.9	28.4	15.5	5.8	6.1	16.0	4.5
Travel Time (hr)	1.8	9.1	1.0	0.4	4.8	0.2	4.0	2.0	0.8	0.8	2.1	0.6
Vehicles Entered	81	529	60	22	411	17	193	110	39	32	85	24
Vehicles Exited	82	533	61	22	410	16	193	109	40	31	85	24
Hourly Exit Rate	82	533	61	22	410	16	193	109	40	31	85	24
Input Volume	80	537	60	22	421	17	192	107	37	34	78	24
% of Volume	102	99	102	101	97	96	101	102	108	91	109	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.2
Total Delay (hr)	21.8
Total Del/Veh (s)	47.9
Stop Delay (hr)	18.9
Stop Del/Veh (s)	41.6
Travel Dist (mi)	155.9
Travel Time (hr)	27.3
Vehicles Entered	1603
Vehicles Exited	1606
Hourly Exit Rate	1606
Input Volume	1609
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.1	0.4	3.6	0.0	0.0	0.0	0.4
Total Delay (hr)	0.1	0.3	0.0	0.0	0.1	0.0	0.0	0.7
Total Del/Veh (s)	4.8	3.1	0.4	0.2	12.6	0.8	4.5	2.7
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.3
Stop Del/Veh (s)	2.0	0.6	0.0	0.0	11.6	0.0	4.6	1.2
Travel Dist (mi)	4.0	23.4	24.1	4.8	0.8	0.0	0.8	57.9
Travel Time (hr)	0.3	1.4	0.9	0.3	0.2	0.0	0.1	3.1
Vehicles Entered	65	382	279	56	42	2	40	866
Vehicles Exited	65	387	279	56	42	2	40	871
Hourly Exit Rate	65	387	279	56	42	2	40	871
Input Volume	62	389	281	54	43	2	39	869
% of Volume	105	99	99	104	98	133	103	100
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	2.8	0.5	3.4
Total Del/Veh (s)	10.6	3.3	7.8
Stop Delay (hr)	2.1	0.5	2.6
Stop Del/Veh (s)	8.0	2.7	6.0
Travel Dist (mi)	73.6	14.5	88.1
Travel Time (hr)	6.3	1.1	7.4
Vehicles Entered	955	600	1555
Vehicles Exited	956	599	1555
Hourly Exit Rate	956	599	1555
Input Volume	956	608	1564
% of Volume	100	99	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.3	0.0
Denied Del/Veh (s)	0.9	1.9	3.6	0.0	0.0	0.0	2.8	0.9	1.2	3.1	1.0	2.9
Total Delay (hr)	0.9	5.6	1.2	5.4	3.0	0.4	2.9	15.4	2.3	3.0	8.8	0.2
Total Del/Veh (s)	71.8	73.1	55.6	55.6	55.4	21.1	83.5	41.1	15.3	77.4	33.0	15.8
Stop Delay (hr)	0.8	5.1	1.1	5.1	2.7	0.4	2.6	11.8	1.7	2.8	7.1	0.1
Stop Del/Veh (s)	66.6	65.9	51.1	52.0	50.3	19.3	75.3	31.5	11.4	71.2	26.8	12.1
Travel Dist (mi)	4.3	27.2	7.4	25.7	14.1	4.9	18.4	199.2	81.2	16.6	111.3	5.1
Travel Time (hr)	1.1	6.7	1.6	6.5	3.5	0.6	3.6	22.5	5.7	3.8	12.8	0.4
Vehicles Entered	44	273	75	344	189	65	122	1322	540	140	933	42
Vehicles Exited	43	273	74	346	188	65	122	1322	543	140	934	42
Hourly Exit Rate	43	273	74	346	188	65	122	1322	543	140	934	42
Input Volume	48	276	75	347	196	64	124	1328	543	137	920	44
% of Volume	89	99	98	100	96	102	99	100	100	102	102	95
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	1.3
Denied Del/Veh (s)	1.1
Total Delay (hr)	49.0
Total Del/Veh (s)	42.3
Stop Delay (hr)	41.3
Stop Del/Veh (s)	35.6
Travel Dist (mi)	515.3
Travel Time (hr)	68.6
Vehicles Entered	4089
Vehicles Exited	4092
Hourly Exit Rate	4092
Input Volume	4102
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.1
Total Delay (hr)	0.1	0.0	0.1
Total Del/Veh (s)	3.5	1.1	2.5
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	2.4	0.1	1.5
Travel Dist (mi)	2.6	14.0	16.6
Travel Time (hr)	0.3	0.5	0.8
Vehicles Entered	124	83	207
Vehicles Exited	125	84	209
Hourly Exit Rate	125	84	209
Input Volume	120	82	202
% of Volume	105	102	104
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.1	0.3
Total Del/Veh (s)	1.3	0.7	0.6	1.0
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	0.1	0.0	0.0	0.0
Travel Dist (mi)	67.1	0.5	23.4	91.0
Travel Time (hr)	2.5	0.0	0.9	3.4
Vehicles Entered	612	4	436	1052
Vehicles Exited	612	4	436	1052
Hourly Exit Rate	612	4	436	1052
Input Volume	618	5	443	1065
% of Volume	99	80	98	99
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.3	0.0	0.0	0.2	0.0	0.0	0.6
Total Del/Veh (s)	1.9	2.7	7.6	1.6	17.3	12.5	2.1
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Stop Del/Veh (s)	0.5	1.8	4.5	0.3	15.7	12.3	0.7
Travel Dist (mi)	45.2	0.4	0.4	36.7	0.4	0.5	83.5
Travel Time (hr)	1.9	0.0	0.0	1.7	0.1	0.1	3.8
Vehicles Entered	629	5	4	426	10	12	1086
Vehicles Exited	630	5	4	426	10	12	1087
Hourly Exit Rate	630	5	4	426	10	12	1087
Input Volume	636	5	5	428	10	10	1094
% of Volume	99	100	80	100	98	117	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Delay (hr)	0.6	0.2	0.5	0.0	0.4	0.1	1.7
Total Del/Veh (s)	3.7	2.1	2.8	2.5	12.1	9.7	3.6
Stop Delay (hr)	0.3	0.1	0.3	0.0	0.4	0.1	1.1
Stop Del/Veh (s)	2.0	0.7	1.6	1.7	11.5	9.5	2.3
Travel Dist (mi)	13.8	10.0	32.5	2.8	4.8	1.2	65.1
Travel Time (hr)	1.1	0.8	1.8	0.2	0.6	0.1	4.6
Vehicles Entered	555	402	579	51	112	25	1724
Vehicles Exited	554	402	579	51	112	25	1723
Hourly Exit Rate	554	402	579	51	112	25	1723
Input Volume	568	389	587	54	108	25	1730
% of Volume	98	103	99	95	104	101	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)	4.4	3.4	0.2	1.5	0.6
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	3.6	3.4	0.0	0.2	0.1
Travel Dist (mi)	0.0	0.0	22.5	24.8	47.3
Travel Time (hr)	0.0	0.0	0.8	1.0	1.8
Vehicles Entered	2	2	336	169	509
Vehicles Exited	2	2	335	169	508
Hourly Exit Rate	2	2	335	169	508
Input Volume	2	2	327	161	492
% of Volume	100	100	102	105	103
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.1	0.3	0.4		0.0	0.2
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)		3.0	0.4	0.0		0.2	0.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)		3.1	0.0	0.0		0.0	0.0
Travel Dist (mi)	0.0	0.0	9.0	0.0	0.0	11.4	20.5
Travel Time (hr)	0.0	0.0	0.4	0.0	0.0	0.4	0.8
Vehicles Entered	0	2	334	1	0	169	506
Vehicles Exited	0	2	334	1	0	169	506
Hourly Exit Rate	0	2	334	1	0	169	506
Input Volume	1	1	326	1	1	161	491
% of Volume	0	200	102	100	0	105	103
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.8
Denied Del/Veh (s)	1.0
Total Delay (hr)	132.5
Total Del/Veh (s)	70.5
Stop Delay (hr)	104.7
Stop Del/Veh (s)	55.7
Travel Dist (mi)	3575.3
Travel Time (hr)	263.0
Vehicles Entered	6483
Vehicles Exited	6520
Hourly Exit Rate	6520
Input Volume	30923
% of Volume	21
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Seminary Dr	4	0.5	23.8	0.2	30
	20	1.1	15.3	0.1	28
Ringwood Ave	3	28.5	35.9	0.1	6
Ravenswood Ave	2	6.2	17.4	0.1	19
	1	15.8	40.0	0.2	19
Total		52.2	132.4	0.7	18

Arterial Level of Service: SB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Ravenswood Ave	2	61.4	85.1	0.2	9
	3	5.2	16.1	0.1	21
	20	1.8	9.6	0.1	23
	4	1.0	15.0	0.1	28
Total		69.4	125.8	0.5	14

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	162	208	58	184	149	424	160	584
Average Queue (ft)	64	100	9	77	85	228	63	293
95th Queue (ft)	124	181	39	150	163	386	157	499
Link Distance (ft)		1416		961		1023		1985
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)		0	0	23	1	27	0	33
Queuing Penalty (veh)		0	0	2	5	29	1	22

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	398	170	382	220	487
Average Queue (ft)	171	91	238	68	295
95th Queue (ft)	365	226	356	155	450
Link Distance (ft)	390		420	420	1023
Upstream Blk Time (%)	1		0	0	
Queuing Penalty (veh)	8		2	0	
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	30	2			
Queuing Penalty (veh)	149	3			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	SB	SB
Directions Served	L	TR	LT	R	L	T	T	R	T	T	L	T
Maximum Queue (ft)	56	61	114	193	58	279	336	150	24	99	175	394
Average Queue (ft)	13	21	48	82	4	117	217	58	1	8	166	245
95th Queue (ft)	41	52	97	148	33	244	341	159	16	49	194	424
Link Distance (ft)	255	255	257	257		260	260		565	565		420
Upstream Blk Time (%)				0		1	6					1
Queuing Penalty (veh)				0		2	20					2
Storage Bay Dist (ft)					175			100			125	
Storage Blk Time (%)						2	32	0			37	0
Queuing Penalty (veh)						0	24	0			84	1

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	489
Average Queue (ft)	139
95th Queue (ft)	410
Link Distance (ft)	420
Upstream Blk Time (%)	1
Queuing Penalty (veh)	6
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	WB	NB	NB	NB	NB	SB	SB	B20	B20
Directions Served	LTR	LTR	L	T	T	R	L	TR	T	
Maximum Queue (ft)	44	52	17	8	20	3	50	17	12	4
Average Queue (ft)	16	18	1	0	1	0	13	1	1	0
95th Queue (ft)	43	41	8	6	9	2	38	10	9	0
Link Distance (ft)	274	195		1010	1010			565	260	260
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			50			85	80			
Storage Blk Time (%)				0			0			
Queuing Penalty (veh)				0			0			

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	101	16	32	39	59
Average Queue (ft)	7	1	7	11	17
95th Queue (ft)	43	8	28	36	45
Link Distance (ft)	217	317		249	834
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	LT	R	LTR
Maximum Queue (ft)	101	322	45	35	62
Average Queue (ft)	5	97	14	13	19
95th Queue (ft)	51	253	40	37	49
Link Distance (ft)	232	517	525		577
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)				75	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	109	468	285	242	94	250	120	419	128	217
Average Queue (ft)	58	393	99	52	25	211	102	199	36	104
95th Queue (ft)	117	531	272	183	71	306	142	375	96	182
Link Distance (ft)		343	209	209		232		723		997
Upstream Blk Time (%)		30	8	3		21				
Queuing Penalty (veh)		204	28	9		96				
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	2	51			1	41	30	17	0	13
Queuing Penalty (veh)	15	40			5	9	41	33	0	4

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	SB
Directions Served	LT	R	LR
Maximum Queue (ft)	197	11	71
Average Queue (ft)	37	0	35
95th Queue (ft)	120	8	60
Link Distance (ft)	257		66
Upstream Blk Time (%)	0		1
Queuing Penalty (veh)	0		1
Storage Bay Dist (ft)		135	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	311	334	78	74
Average Queue (ft)	95	117	20	18
95th Queue (ft)	265	318	68	62
Link Distance (ft)	318	318	67	67
Upstream Blk Time (%)	0	1	5	3
Queuing Penalty (veh)	0	5	16	10
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	431	250	270	289	307	160	345	764	704	478	265	503
Average Queue (ft)	203	161	127	146	149	49	186	458	411	172	167	312
95th Queue (ft)	364	265	223	245	278	144	377	708	659	403	290	461
Link Distance (ft)	515			318	318			792	792	792		621
Upstream Blk Time (%)	0		0	0	1			2	1	0		1
Queuing Penalty (veh)	0		0	1	3			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	6	4	0	1	16	0	0	22			1	17
Queuing Penalty (veh)	14	8	0	2	10	0	0	28			4	23

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	456	100
Average Queue (ft)	265	23
95th Queue (ft)	411	83
Link Distance (ft)	621	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		75
Storage Blk Time (%)	34	0
Queuing Penalty (veh)	15	0

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	67	16
Average Queue (ft)	36	1
95th Queue (ft)	55	11
Link Distance (ft)	66	887
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB
Directions Served	TR
Maximum Queue (ft)	43
Average Queue (ft)	0
95th Queue (ft)	0
Link Distance (ft)	517
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 36: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	155	124	54
Average Queue (ft)	12	5	17
95th Queue (ft)	76	47	45
Link Distance (ft)	317	390	207
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	TR	T	TR	R	R
Maximum Queue (ft)	102	87	140	125	114	56
Average Queue (ft)	41	33	40	34	45	18
95th Queue (ft)	99	87	104	96	86	46
Link Distance (ft)	67	67	209	209	222	259
Upstream Blk Time (%)	6	4	0			
Queuing Penalty (veh)	31	18	0			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 42: Laurel St

Movement	WB
Directions Served	LR
Maximum Queue (ft)	26
Average Queue (ft)	3
95th Queue (ft)	19
Link Distance (ft)	95
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 44: Laurel St

Movement	WB
Directions Served	LR
Maximum Queue (ft)	26
Average Queue (ft)	2
95th Queue (ft)	14
Link Distance (ft)	85
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1034

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	6.5	54.3	52.4	7.5	53.3	52.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	None	Max	None
Avg. Green (s)	6.1	4.8	8.6	6.8	1.4	8.6	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	42	0	0	15	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	27	100	100	52	100	100	0
Cycles with Peds (%)	0	33	96	0	13	11	0

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	2	3	5	6	7	8
Movement(s) Served	NBT	EBR	NBL	SBT	EBL	NBTL
Maximum Green (s)	48.3	72.7	5.0	38.8	34.5	33.7
Minimum Green (s)	10.0	8.0	5.0	7.0	7.0	7.0
Recall	C-Max	Min	None	C-Max	Ped	None
Avg. Green (s)	3.1	-8.3	5.8	2.3	5.2	9.1
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	92	0	0	0
Cycles @ Minimum (%)	0	0	8	0	0	0
Cycles Maxed Out (%)	100	42	4	100	46	43
Cycles with Peds (%)	96	0	0	12	100	25

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	5.3	79.3	41.4	8.5	76.1	35.4
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Min	C-Max	None	Min	Max
Avg. Green (s)	5.5	9.9	-12.9	6.7	6.2	2.6
g/C Ratio	0.11	0.62	-0.80	0.27	0.39	0.16
Cycles Skipped (%)	69	0	0	35	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	31	50	100	6	50	100
Cycles with Peds (%)	0	60	45	0	50	45

Controller Summary
Average Cycle Length (s): 16.2
Number of Complete Cycles : 16

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	None	None	None	C-Max
Avg. Green (s)	-8.6	0.4	-6.1	-1.3	-13.1	7.4
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	4	0
Cycles @ Minimum (%)	0	0	0	0	4	0
Cycles Maxed Out (%)	100	100	46	75	4	100
Cycles with Peds (%)	0	55	0	71	0	24

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	7:30	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6923	7065	6994	6943	6968	6912	7040
Vehs Exited	6983	7047	7013	6960	7024	6998	7050
Starting Vehs	294	245	270	266	286	306	273
Ending Vehs	234	263	251	249	230	220	263
Denied Entry Before	4	3	1	0	1	2	4
Denied Entry After	2	3	2	3	1	0	2
Travel Distance (mi)	3697	3694	3716	3667	3659	3703	3722
Travel Time (hr)	269.0	268.0	303.6	280.2	272.8	274.6	386.3
Total Delay (hr)	135.4	134.2	169.3	147.5	140.5	140.6	251.5
Total Stops	9589	9590	10527	9969	9591	9872	11592
Fuel Used (gal)	157.6	157.5	166.7	160.2	158.7	159.8	185.5

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6861	7014	6992	6965
Vehs Exited	6893	7019	7024	7002
Starting Vehs	280	265	255	274
Ending Vehs	248	260	223	239
Denied Entry Before	0	1	0	0
Denied Entry After	2	1	2	0
Travel Distance (mi)	3673	3691	3659	3688
Travel Time (hr)	272.1	294.2	284.5	290.5
Total Delay (hr)	138.7	160.5	152.0	157.0
Total Stops	9796	10159	9951	10060
Fuel Used (gal)	158.1	163.8	161.4	162.9

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	8:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1591	1615	1644	1611	1593	1685	1665
Vehs Exited	1651	1611	1647	1594	1620	1696	1648
Starting Vehs	294	245	270	266	286	306	273
Ending Vehs	234	249	267	283	259	295	290
Denied Entry Before	4	3	1	0	1	2	4
Denied Entry After	1	0	1	1	1	2	4
Travel Distance (mi)	870	865	882	843	862	938	903
Travel Time (hr)	61.6	60.6	61.1	58.5	60.3	68.2	65.9
Total Delay (hr)	30.1	29.3	29.3	28.1	29.2	34.3	33.1
Total Stops	2228	2171	2243	2097	2114	2429	2409
Fuel Used (gal)	36.7	36.6	37.2	35.5	36.2	39.9	38.4

Interval #1 Information Recording

Start Time	8:00
End Time	8:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1595	1575	1656	1618
Vehs Exited	1614	1563	1661	1632
Starting Vehs	280	265	255	274
Ending Vehs	261	277	250	263
Denied Entry Before	0	1	0	0
Denied Entry After	4	2	4	0
Travel Distance (mi)	862	849	877	875
Travel Time (hr)	61.3	59.0	61.8	61.8
Total Delay (hr)	30.0	28.3	30.1	30.2
Total Stops	2223	2090	2244	2227
Fuel Used (gal)	36.6	35.6	36.8	37.0

Interval #2 Information

Start Time	8:15
End Time	8:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2063	2075	1988	2074	2094	2047	2050
Vehs Exited	1965	1974	1865	1967	2039	1973	1753
Starting Vehs	234	249	267	283	259	295	290
Ending Vehs	332	350	390	390	314	369	587
Denied Entry Before	1	0	1	1	1	2	4
Denied Entry After	3	10	12	9	13	9	61
Travel Distance (mi)	1030	1031	955	1015	1030	1026	878
Travel Time (hr)	78.6	79.8	88.3	86.7	80.0	82.9	108.2
Total Delay (hr)	41.3	42.5	53.7	49.8	42.9	45.7	76.4
Total Stops	2808	2829	2921	3025	2759	2977	2851
Fuel Used (gal)	44.7	44.9	45.0	46.2	45.4	45.6	47.4

Interval #2 Information

Start Time	8:15
End Time	8:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2063	2147	2067	2064
Vehs Exited	1966	2021	1941	1945
Starting Vehs	261	277	250	263
Ending Vehs	358	403	376	389
Denied Entry Before	4	2	4	0
Denied Entry After	5	28	24	14
Travel Distance (mi)	1041	1032	994	1003
Travel Time (hr)	79.6	90.1	83.5	85.8
Total Delay (hr)	41.6	52.5	47.5	49.4
Total Stops	2910	3056	2904	2902
Fuel Used (gal)	45.3	47.2	45.2	45.7

Interval #3 Information

Start Time	8:30
End Time	8:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1628	1677	1655	1639	1670	1592	1664
Vehs Exited	1706	1760	1733	1764	1676	1708	1847
Starting Vehs	332	350	390	390	314	369	587
Ending Vehs	254	267	312	265	308	253	404
Denied Entry Before	3	10	12	9	13	9	61
Denied Entry After	1	1	1	3	1	1	15
Travel Distance (mi)	905	907	928	924	880	883	982
Travel Time (hr)	66.9	65.5	87.4	73.7	69.0	66.1	130.9
Total Delay (hr)	34.2	32.6	53.9	40.3	37.1	34.2	95.3
Total Stops	2413	2396	3015	2615	2469	2388	3455
Fuel Used (gal)	38.8	38.6	44.4	41.2	39.0	38.5	55.5

Interval #3 Information

Start Time	8:30
End Time	8:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1608	1627	1644	1637
Vehs Exited	1685	1766	1753	1737
Starting Vehs	358	403	376	389
Ending Vehs	281	264	267	286
Denied Entry Before	5	28	24	14
Denied Entry After	3	2	3	1
Travel Distance (mi)	906	917	912	914
Travel Time (hr)	71.6	80.8	79.1	79.1
Total Delay (hr)	38.8	47.6	46.0	46.0
Total Stops	2585	2748	2661	2674
Fuel Used (gal)	40.0	42.7	42.3	42.1

Interval #4 Information

Start Time	8:45
End Time	9:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1641	1698	1707	1619	1611	1588	1661
Vehs Exited	1661	1702	1768	1635	1689	1621	1802
Starting Vehs	254	267	312	265	308	253	404
Ending Vehs	234	263	251	249	230	220	263
Denied Entry Before	1	1	1	3	1	1	15
Denied Entry After	2	3	2	3	1	0	2
Travel Distance (mi)	892	890	951	885	888	856	959
Travel Time (hr)	61.9	62.0	66.8	61.3	63.4	57.3	81.3
Total Delay (hr)	29.8	29.8	32.5	29.3	31.3	26.4	46.7
Total Stops	2140	2194	2348	2232	2249	2078	2877
Fuel Used (gal)	37.3	37.4	40.1	37.4	38.0	35.7	44.2

Interval #4 Information

Start Time	8:45
End Time	9:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1595	1665	1625	1638
Vehs Exited	1628	1669	1669	1685
Starting Vehs	281	264	267	286
Ending Vehs	248	260	223	239
Denied Entry Before	3	2	3	1
Denied Entry After	2	1	2	0
Travel Distance (mi)	864	892	876	895
Travel Time (hr)	59.6	64.4	60.0	63.8
Total Delay (hr)	28.3	32.2	28.3	31.4
Total Stops	2078	2265	2142	2257
Fuel Used (gal)	36.3	38.3	37.1	38.2

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.1
Denied Del/Veh (s)	2.9	0.4	0.4	3.5	0.3	0.4	0.1	0.0	0.0	4.6	3.4	4.4
Total Delay (hr)	1.5	2.1	0.5	0.3	1.9	1.2	1.5	4.9	0.6	2.4	6.1	1.8
Total Del/Veh (s)	62.1	36.7	39.3	51.5	33.0	32.8	49.9	42.6	44.5	55.5	56.6	61.2
Stop Delay (hr)	1.4	1.8	0.5	0.3	1.5	1.0	1.3	4.0	0.5	2.0	4.9	1.5
Stop Del/Veh (s)	58.4	31.4	36.2	46.7	26.8	28.7	43.1	35.2	38.7	45.4	44.9	51.4
Travel Dist (mi)	22.4	54.4	13.2	4.0	36.6	23.7	21.7	80.7	8.9	58.1	144.0	38.5
Travel Time (hr)	2.3	4.0	1.0	0.5	3.1	2.1	2.3	7.7	0.9	4.7	11.3	3.3
Vehicles Entered	83	202	49	22	200	130	108	406	44	154	382	103
Vehicles Exited	85	201	49	22	199	129	107	407	44	155	383	102
Hourly Exit Rate	85	201	49	22	199	129	107	407	44	155	383	102
Input Volume	80	209	49	25	205	133	105	394	44	156	380	109
% of Volume	106	96	100	87	97	97	102	103	100	99	101	93
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.8
Denied Del/Veh (s)	1.6
Total Delay (hr)	24.8
Total Del/Veh (s)	46.6
Stop Delay (hr)	20.7
Stop Del/Veh (s)	38.9
Travel Dist (mi)	506.1
Travel Time (hr)	43.2
Vehicles Entered	1883
Vehicles Exited	1883
Hourly Exit Rate	1883
Input Volume	1890
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.8
Denied Del/Veh (s)	4.8	0.0	5.8	0.1	0.0	0.0	0.0	1.5
Total Delay (hr)	1.3	0.0	1.9	6.8	0.5	7.3	1.5	19.3
Total Del/Veh (s)	44.3	2.8	17.7	60.3	3.7	69.5	64.0	37.7
Stop Delay (hr)	1.2	0.0	1.4	6.2	0.2	6.1	1.3	16.4
Stop Del/Veh (s)	40.3	0.9	13.4	54.7	1.7	58.3	54.7	32.1
Travel Dist (mi)	8.5	0.8	27.6	36.1	42.2	75.6	17.5	208.3
Travel Time (hr)	1.8	0.0	3.6	8.5	2.0	9.9	2.2	27.9
Vehicles Entered	102	18	383	398	459	371	85	1816
Vehicles Exited	103	18	384	397	456	369	85	1812
Hourly Exit Rate	103	18	384	397	456	369	85	1812
Input Volume	97	18	379	399	444	370	86	1793
% of Volume	106	100	101	99	103	100	99	101
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.0
Total Delay (hr)	0.2	0.1	0.0	1.6	0.2	1.3	0.6	5.3	0.5	4.9	3.5	0.1
Total Del/Veh (s)	67.8	39.3	8.4	41.7	15.7	16.3	74.0	34.5	15.7	75.5	24.5	13.1
Stop Delay (hr)	0.2	0.1	0.0	1.5	0.2	1.3	0.6	4.7	0.4	4.5	2.6	0.1
Stop Del/Veh (s)	65.7	36.4	7.7	39.0	13.7	16.2	71.2	30.2	13.2	68.8	18.7	10.1
Travel Dist (mi)	0.4	0.4	0.1	7.7	2.4	16.5	1.6	33.3	6.8	20.5	44.7	3.6
Travel Time (hr)	0.2	0.1	0.0	1.9	0.3	2.3	0.6	6.5	0.8	5.8	5.2	0.3
Vehicles Entered	9	8	3	135	56	294	27	552	111	227	502	40
Vehicles Exited	9	8	3	134	56	292	28	554	111	230	505	40
Hourly Exit Rate	9	8	3	134	56	292	28	554	111	230	505	40
Input Volume	10	10	2	136	54	298	27	533	105	227	496	42
% of Volume	92	82	150	99	103	98	104	104	106	101	102	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	18.4
Total Del/Veh (s)	33.3
Stop Delay (hr)	16.1
Stop Del/Veh (s)	29.2
Travel Dist (mi)	137.9
Travel Time (hr)	24.2
Vehicles Entered	1964
Vehicles Exited	1970
Hourly Exit Rate	1970
Input Volume	1940
% of Volume	102
Denied Entry Before	0
Denied Entry After	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	2.9	0.6	2.7	0.0	0.0	0.0	0.3
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.0	0.5
Total Del/Veh (s)	24.8	4.5	20.2	7.7	4.4	1.3	0.7	4.8	0.4	0.1	1.3
Stop Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Stop Del/Veh (s)	23.0	4.4	18.5	7.5	2.4	0.0	0.0	3.1	0.0	0.0	0.4
Travel Dist (mi)	0.1	0.3	0.3	1.5	2.8	124.2	1.2	0.7	21.1	0.4	152.5
Travel Time (hr)	0.0	0.0	0.1	0.2	0.1	4.5	0.1	0.1	0.8	0.0	5.8
Vehicles Entered	1	6	7	36	15	645	6	20	596	11	1343
Vehicles Exited	1	6	7	36	15	646	6	20	596	11	1344
Hourly Exit Rate	1	6	7	36	15	646	6	20	596	11	1344
Input Volume	1	5	7	33	15	623	6	21	590	10	1312
% of Volume	80	126	100	110	98	104	96	95	101	107	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	4.7	2.3	0.0	0.0	0.1	0.2	0.1	0.1	0.1	1.1
Total Delay (hr)	0.0	0.5	0.1	0.0	0.0	0.0	0.1	0.5	0.3	1.5
Total Del/Veh (s)	8.2	3.8	1.0	0.3	16.1	13.2	21.5	66.6	51.9	5.4
Stop Delay (hr)	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.5	0.3	1.2
Stop Del/Veh (s)	6.6	2.8	0.0	0.0	14.7	10.6	21.4	64.9	51.6	4.4
Travel Dist (mi)	0.2	22.2	34.1	0.2	0.1	0.0	0.3	4.2	3.5	64.8
Travel Time (hr)	0.0	1.5	1.3	0.0	0.0	0.0	0.1	0.7	0.5	4.0
Vehicles Entered	5	462	483	3	2	1	9	26	22	1013
Vehicles Exited	5	463	484	4	2	1	9	27	22	1017
Hourly Exit Rate	5	463	484	4	2	1	9	27	22	1017
Input Volume	5	461	480	3	2	1	7	26	22	1008
% of Volume	95	100	101	133	100	100	124	104	99	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	4.0	0.1	0.2	0.0
Total Delay (hr)	0.0	0.4	0.0	0.0	0.8	0.0	0.0	0.0	0.1	0.2	1.5
Total Del/Veh (s)	5.5	3.3	2.8	9.2	5.8	1.0	26.5	6.6	27.4	20.4	5.3
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.1	0.2	0.8
Stop Del/Veh (s)	3.1	1.0	1.2	6.5	3.1	0.0	24.6	6.6	25.4	19.8	2.9
Travel Dist (mi)	0.2	26.5	1.4	0.9	50.8	0.1	0.3	0.4	1.1	3.4	85.1
Travel Time (hr)	0.0	1.4	0.1	0.1	2.5	0.0	0.0	0.0	0.1	0.3	4.5
Vehicles Entered	4	472	25	8	490	1	3	4	10	31	1048
Vehicles Exited	4	471	25	8	490	1	3	4	10	31	1047
Hourly Exit Rate	4	471	25	8	490	1	3	4	10	31	1047
Input Volume	3	473	25	7	485	1	4	4	10	27	1038
% of Volume	123	100	101	119	101	100	80	107	98	116	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	2.8	2.2	3.6	0.6	0.2	0.1	0.9	0.4	1.9	3.7	0.4	0.5
Total Delay (hr)	0.3	4.3	0.6	0.2	3.2	0.1	2.2	1.4	0.2	0.9	1.7	0.7
Total Del/Veh (s)	43.4	36.8	31.2	35.6	23.7	20.0	46.3	37.1	41.3	39.9	41.5	41.6
Stop Delay (hr)	0.2	3.4	0.5	0.2	2.6	0.1	2.0	1.2	0.2	0.8	1.4	0.6
Stop Del/Veh (s)	36.7	29.2	25.7	31.4	19.1	17.5	43.0	32.8	38.9	36.0	36.2	38.7
Travel Dist (mi)	1.7	32.7	5.6	1.0	26.2	0.7	23.4	17.4	2.6	14.5	26.5	11.1
Travel Time (hr)	0.3	5.7	0.9	0.2	4.1	0.1	3.1	2.0	0.3	1.5	2.6	1.1
Vehicles Entered	21	416	70	18	485	13	165	132	18	77	140	59
Vehicles Exited	21	419	71	17	482	13	165	131	18	78	141	59
Hourly Exit Rate	21	419	71	17	482	13	165	131	18	78	141	59
Input Volume	21	423	68	17	479	13	159	140	17	78	139	55
% of Volume	101	99	105	100	101	102	104	94	106	100	101	108
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.5
Denied Del/Veh (s)	1.2
Total Delay (hr)	15.6
Total Del/Veh (s)	34.4
Stop Delay (hr)	13.2
Stop Del/Veh (s)	29.2
Travel Dist (mi)	163.4
Travel Time (hr)	22.0
Vehicles Entered	1614
Vehicles Exited	1615
Hourly Exit Rate	1615
Input Volume	1607
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.1	0.4	0.3	0.0	0.8	1.8
Denied Del/Veh (s)	2.6	1.8	1.3	3.3	17.1	0.0	18.7	5.0
Total Delay (hr)	1.9	1.2	0.2	0.3	0.4	0.0	0.5	4.4
Total Del/Veh (s)	34.1	25.9	1.8	3.0	22.6	1.5	11.3	12.3
Stop Delay (hr)	1.7	1.0	0.0	0.1	0.4	0.0	0.5	3.8
Stop Del/Veh (s)	31.8	22.6	0.0	1.3	22.2	0.5	12.0	10.6
Travel Dist (mi)	11.7	9.7	26.1	34.0	1.2	0.3	2.8	85.9
Travel Time (hr)	2.6	1.7	1.1	2.1	0.8	0.0	1.5	9.9
Vehicles Entered	195	166	302	395	64	25	154	1301
Vehicles Exited	195	165	302	395	64	25	154	1300
Hourly Exit Rate	195	165	302	395	64	25	154	1300
Input Volume	192	162	308	400	63	26	148	1298
% of Volume	101	102	98	99	102	98	104	100
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	5.0	0.6	5.6
Total Del/Veh (s)	22.5	3.1	13.3
Stop Delay (hr)	4.3	0.5	4.8
Stop Del/Veh (s)	19.5	2.6	11.5
Travel Dist (mi)	61.0	12.6	73.6
Travel Time (hr)	7.8	1.1	8.9
Vehicles Entered	788	714	1502
Vehicles Exited	790	715	1505
Hourly Exit Rate	790	715	1505
Input Volume	786	704	1490
% of Volume	101	102	101
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
Denied Del/Veh (s)	3.1	4.5	5.0	0.0	0.0	0.0	2.3	0.2	0.4	2.6	0.3	0.3
Total Delay (hr)	1.5	6.7	1.3	8.1	3.7	0.3	2.3	7.4	1.6	2.4	8.9	0.1
Total Del/Veh (s)	84.7	86.2	63.6	62.9	63.0	18.8	74.9	29.3	14.3	79.2	32.2	25.9
Stop Delay (hr)	1.4	6.1	1.2	7.5	3.4	0.2	2.2	6.0	1.3	2.2	7.1	0.1
Stop Del/Veh (s)	78.5	78.5	58.4	58.2	57.7	16.7	70.2	23.8	11.8	73.4	25.8	22.4
Travel Dist (mi)	6.3	27.7	7.1	34.0	15.4	3.8	16.6	132.9	60.9	12.6	115.8	2.1
Travel Time (hr)	1.8	8.0	1.7	9.5	4.2	0.5	3.0	11.9	4.0	2.9	12.9	0.2
Vehicles Entered	63	277	71	457	207	51	110	881	405	106	969	18
Vehicles Exited	63	277	71	461	208	52	110	884	406	106	970	18
Hourly Exit Rate	63	277	71	461	208	52	110	884	406	106	970	18
Input Volume	64	271	70	448	205	51	108	877	407	108	953	18
% of Volume	98	102	101	103	101	101	102	101	100	98	102	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.8
Denied Del/Veh (s)	0.8
Total Delay (hr)	44.3
Total Del/Veh (s)	43.2
Stop Delay (hr)	38.8
Stop Del/Veh (s)	37.8
Travel Dist (mi)	435.3
Travel Time (hr)	60.6
Vehicles Entered	3615
Vehicles Exited	3626
Hourly Exit Rate	3626
Input Volume	3580
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.2	0.2
Total Delay (hr)	0.7	1.5	2.2
Total Del/Veh (s)	4.2	25.5	9.7
Stop Delay (hr)	0.5	1.4	2.0
Stop Del/Veh (s)	3.1	23.8	8.4
Travel Dist (mi)	12.3	36.0	48.3
Travel Time (hr)	1.6	2.8	4.3
Vehicles Entered	620	214	834
Vehicles Exited	620	215	835
Hourly Exit Rate	620	215	835
Input Volume	624	211	834
% of Volume	99	102	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.7	0.1	0.0	0.2	1.0
Total Del/Veh (s)	5.1	7.5	5.4	1.5	3.5
Stop Delay (hr)	0.4	0.1	0.0	0.0	0.5
Stop Del/Veh (s)	3.3	6.1	3.0	0.3	2.0
Travel Dist (mi)	49.6	3.9	1.3	26.0	80.8
Travel Time (hr)	2.3	0.2	0.1	1.1	3.8
Vehicles Entered	464	36	24	482	1006
Vehicles Exited	465	36	24	482	1007
Hourly Exit Rate	465	36	24	482	1007
Input Volume	464	35	25	477	1001
% of Volume	100	103	97	101	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.1	0.1	0.1
Total Delay (hr)	0.8	0.0	0.0	0.2	0.0	0.0	1.1
Total Del/Veh (s)	5.9	9.8	4.6	1.8	18.1	10.6	4.0
Stop Delay (hr)	0.6	0.0	0.0	0.0	0.0	0.0	0.7
Stop Del/Veh (s)	4.6	9.2	2.1	0.2	17.0	10.6	2.5
Travel Dist (mi)	34.7	0.6	0.6	41.3	0.0	0.2	77.4
Travel Time (hr)	2.0	0.0	0.0	2.0	0.0	0.0	4.1
Vehicles Entered	497	8	7	483	1	7	1003
Vehicles Exited	499	8	8	488	1	7	1011
Hourly Exit Rate	499	8	8	488	1	7	1011
Input Volume	490	7	8	485	2	7	1000
% of Volume	102	110	97	101	50	97	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.0	0.0	1.0	0.1	0.1	0.1	0.4
Total Delay (hr)	0.1	0.1	3.7	0.2	0.0	0.5	4.6
Total Del/Veh (s)	0.8	0.9	19.3	22.8	2.8	41.6	10.6
Stop Delay (hr)	0.0	0.0	3.0	0.1	0.0	0.5	3.7
Stop Del/Veh (s)	0.2	0.0	15.7	20.0	2.7	41.3	8.5
Travel Dist (mi)	8.4	5.6	42.2	1.5	0.6	1.9	60.2
Travel Time (hr)	0.4	0.5	5.6	0.2	0.0	0.6	7.4
Vehicles Entered	473	316	691	24	14	45	1563
Vehicles Exited	473	316	691	24	14	46	1564
Hourly Exit Rate	473	316	691	24	14	46	1564
Input Volume	477	309	683	23	14	45	1551
% of Volume	99	102	101	105	98	102	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)		0.1	0.0	3.6	1.7	0.8
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)		0.0	0.0	0.9	0.1	0.1
Travel Dist (mi)	0.0	19.9	0.1	0.1	33.7	53.9
Travel Time (hr)	0.0	0.7	0.0	0.0	1.3	2.0
Vehicles Entered	0	296	2	1	235	534
Vehicles Exited	0	296	2	1	235	534
Hourly Exit Rate	0	296	2	1	235	534
Input Volume	1	295	1	1	228	526
% of Volume	0	100	200	100	103	102
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

44: Laurel St Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.0	1.2	0.3	0.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Travel Dist (mi)	8.8	0.0	0.0	15.2	24.1
Travel Time (hr)	0.3	0.0	0.0	0.5	0.9
Vehicles Entered	298	1	1	229	529
Vehicles Exited	298	1	1	230	530
Hourly Exit Rate	298	1	1	230	530
Input Volume	296	1	1	223	521
% of Volume	101	100	100	103	102
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	5.5
Denied Del/Veh (s)	2.9
Total Delay (hr)	151.5
Total Del/Veh (s)	75.3
Stop Delay (hr)	124.6
Stop Del/Veh (s)	61.9
Travel Dist (mi)	3688.0
Travel Time (hr)	290.5
Vehicles Entered	6965
Vehicles Exited	7002
Hourly Exit Rate	7002
Input Volume	32703
% of Volume	21
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Seminary Dr	4	1.3	25.0	0.2	29
	46	0.3	4.6	0.0	28
	20	1.0	11.0	0.1	27
Ringwood Ave	3	34.5	41.8	0.1	5
Ravenswood Ave	2	2.8	14.0	0.1	24
	1	47.6	71.0	0.2	10
Total		87.5	167.4	0.7	15

Arterial Level of Service: SB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Ravenswood Ave	2	66.5	90.8	0.2	8
	3	16.6	27.1	0.1	12
	20	1.3	9.1	0.1	24
	46	0.6	10.6	0.1	28
	4	0.4	4.7	0.0	27
Total		85.5	142.5	0.5	12

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	207	404	74	370	150	512	160	814
Average Queue (ft)	75	157	21	195	89	287	107	413
95th Queue (ft)	160	358	62	327	174	473	194	1050
Link Distance (ft)		1416		961		1022		1985
Upstream Blk Time (%)								2
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	0	3	4	45	2	42	2	32
Queuing Penalty (veh)	1	3	15	12	7	44	10	51

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	366	170	437	340	675
Average Queue (ft)	144	86	311	50	306
95th Queue (ft)	347	218	457	223	760
Link Distance (ft)	387		420	420	1022
Upstream Blk Time (%)	4		6	1	2
Queuing Penalty (veh)	22		23	3	10
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	16	7			
Queuing Penalty (veh)	62	7			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	SB	SB
Directions Served	L	TR	LT	R	L	T	T	R	T	T	L	T
Maximum Queue (ft)	57	48	218	223	149	291	335	150	24	86	175	402
Average Queue (ft)	11	9	110	106	31	137	215	77	1	7	150	219
95th Queue (ft)	42	34	189	190	95	274	340	181	17	45	207	405
Link Distance (ft)	255	255	257	257		260	260		382	382		420
Upstream Blk Time (%)			0	0		2	5					4
Queuing Penalty (veh)			0	0		7	19					16
Storage Bay Dist (ft)					175			100			125	
Storage Blk Time (%)					0	6	31	0			33	7
Queuing Penalty (veh)					0	2	34	1			82	16

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	451
Average Queue (ft)	141
95th Queue (ft)	439
Link Distance (ft)	420
Upstream Blk Time (%)	8
Queuing Penalty (veh)	35
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	30	60	33	42
Average Queue (ft)	7	22	6	10
95th Queue (ft)	27	49	26	34
Link Distance (ft)	274	207		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			50	80
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	135	18	24	38	121
Average Queue (ft)	19	1	2	9	43
95th Queue (ft)	112	9	14	34	176
Link Distance (ft)	218	315	150	150	834
Upstream Blk Time (%)	2				
Queuing Penalty (veh)	11				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	LT	R	LTR
Maximum Queue (ft)	74	239	32	26	102
Average Queue (ft)	9	65	4	4	29
95th Queue (ft)	71	190	20	19	72
Link Distance (ft)	232	517	525		577
Upstream Blk Time (%)	1				
Queuing Penalty (veh)	4				
Storage Bay Dist (ft)				75	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	102	457	280	26	94	251	120	383	134	259
Average Queue (ft)	18	270	40	1	16	189	93	125	68	130
95th Queue (ft)	59	521	174	27	54	306	138	290	138	223
Link Distance (ft)		344	246	246		232		719		997
Upstream Blk Time (%)		12	2	0		11				
Queuing Penalty (veh)		62	4	0		54				
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	0	33			0	35	20	12	1	18
Queuing Penalty (veh)	0	7			1	6	30	20	2	14

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	274	159	143	100
Average Queue (ft)	174	7	35	63
95th Queue (ft)	303	71	103	100
Link Distance (ft)	257	454		66
Upstream Blk Time (%)	6			21
Queuing Penalty (veh)	21			47
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		0	1	
Queuing Penalty (veh)		0	4	

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	335	346	53	42
Average Queue (ft)	144	135	21	14
95th Queue (ft)	366	365	52	41
Link Distance (ft)	318	318	34	34
Upstream Blk Time (%)	3	5	25	19
Queuing Penalty (veh)	13	19	89	66
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	489	250	299	342	325	160	314	421	415	336	265	490
Average Queue (ft)	250	183	185	204	171	50	116	273	239	116	139	310
95th Queue (ft)	452	279	326	356	327	157	238	384	360	256	272	440
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	4		0	3	3							0
Queuing Penalty (veh)	0		0	11	9							0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	14	8	2	7	23	0	0	3			0	18
Queuing Penalty (veh)	30	15	4	15	12	0	2	3			1	19

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	450
Average Queue (ft)	268
95th Queue (ft)	394
Link Distance (ft)	621
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	97	282
Average Queue (ft)	69	57
95th Queue (ft)	87	244
Link Distance (ft)	66	887
Upstream Blk Time (%)	7	
Queuing Penalty (veh)	42	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB
Directions Served	TR	LT
Maximum Queue (ft)	90	168
Average Queue (ft)	17	21
95th Queue (ft)	156	94
Link Distance (ft)	517	218
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	6	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 36: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	115	106	32
Average Queue (ft)	25	8	8
95th Queue (ft)	160	63	30
Link Distance (ft)	315	387	148
Upstream Blk Time (%)	3		
Queuing Penalty (veh)	16		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	B27	NB	SB
Directions Served	T	TR	TR	T	R	R
Maximum Queue (ft)	40	7	359	348	36	99
Average Queue (ft)	3	0	217	92	11	35
95th Queue (ft)	21	0	469	293	34	76
Link Distance (ft)	34	34	246	344	222	220
Upstream Blk Time (%)	1		18	1		
Queuing Penalty (veh)	5		120	4		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 42: Laurel St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	12	6
Average Queue (ft)	0	0
95th Queue (ft)	4	5
Link Distance (ft)	69	719
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Laurel St

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1270

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	12.1	52.7	48.4	7.2	57.6	48.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	None	Max	None
Avg. Green (s)	9.3	8.0	-1.0	7.0	9.3	-1.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	15	0	0	12	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	19	100	100	62	100	100	0
Cycles with Peds (%)	0	38	96	0	12	8	0

Controller Summary

Average Cycle Length (s): -6.5

Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	2	3	5	6	7	8
Movement(s) Served	NBT	EBR	NBL	SBT	EBL	NBTL
Maximum Green (s)	50.5	70.5	5.1	40.9	33.0	33.0
Minimum Green (s)	10.0	8.0	5.0	7.0	7.0	7.0
Recall	C-Max	Min	None	C-Max	Max	None
Avg. Green (s)	0.1	-5.1	5.2	-5.8	10.0	7.4
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	35	0	0	0
Cycles @ Minimum (%)	0	0	35	0	0	0
Cycles Maxed Out (%)	100	100	27	100	100	92
Cycles with Peds (%)	96	0	0	23	96	38

Controller Summary

Average Cycle Length (s): -6.5

Number of Complete Cycles : 24

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	4.9	39.5	23.8	4.9	39.5	23.2
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Max	C-Max	None	Max	Max
Avg. Green (s)	5.8	5.8	3.3	5.3	5.3	2.7
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	86	0	0	79	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	14	100	100	21	100	100
Cycles with Peds (%)	0	45	9	0	19	22

Controller Summary

Average Cycle Length (s): -7.0
Number of Complete Cycles : 28

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	Max	Max	None	C-Max
Avg. Green (s)	-12.4	0.4	-4.3	0.7	13.6	5.2
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	4	0
Cycles @ Minimum (%)	0	0	0	0	8	0
Cycles Maxed Out (%)	100	100	100	100	4	100
Cycles with Peds (%)	0	50	0	71	0	19

Controller Summary

Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:30	4:30	4:30	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6950	6754	6979	6774	6982	6879	7026
Vehs Exited	6943	6775	6961	6793	6969	6926	7032
Starting Vehs	291	275	273	296	264	304	289
Ending Vehs	298	254	291	277	277	257	283
Denied Entry Before	0	1	4	3	3	3	2
Denied Entry After	2	3	2	0	0	2	1
Travel Distance (mi)	3827	3678	3824	3703	3813	3811	3858
Travel Time (hr)	287.4	262.4	284.1	271.8	279.5	279.3	301.6
Total Delay (hr)	150.2	130.3	146.7	138.7	142.7	142.6	163.3
Total Stops	9475	8613	9529	8980	9259	9233	10120
Fuel Used (gal)	165.6	155.7	165.1	159.0	163.8	163.4	170.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6890	6950	6816	6896
Vehs Exited	6901	6939	6829	6907
Starting Vehs	288	289	301	287
Ending Vehs	277	300	288	272
Denied Entry Before	3	2	1	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	3739	3763	3801	3782
Travel Time (hr)	288.8	289.9	278.4	282.3
Total Delay (hr)	154.3	154.3	141.9	146.5
Total Stops	9851	9682	9199	9391
Fuel Used (gal)	164.0	165.7	162.3	163.5

Interval #0 Information Seeding

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1649	1638	1640	1618	1653	1637	1640
Vehs Exited	1678	1628	1609	1686	1645	1644	1607
Starting Vehs	291	275	273	296	264	304	289
Ending Vehs	262	285	304	228	272	297	322
Denied Entry Before	0	1	4	3	3	3	2
Denied Entry After	0	1	2	0	0	2	0
Travel Distance (mi)	903	899	895	924	896	927	890
Travel Time (hr)	63.3	63.4	66.5	67.6	63.2	65.9	66.7
Total Delay (hr)	31.0	31.1	34.5	34.4	31.2	32.8	34.7
Total Stops	2010	2020	2286	2239	1997	2121	2284
Fuel Used (gal)	38.3	38.2	38.8	39.6	37.6	39.1	38.2

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1610	1627	1617	1630
Vehs Exited	1610	1624	1647	1635
Starting Vehs	288	289	301	287
Ending Vehs	288	292	271	272
Denied Entry Before	3	2	1	0
Denied Entry After	2	1	1	0
Travel Distance (mi)	882	893	906	902
Travel Time (hr)	62.0	63.6	67.1	64.9
Total Delay (hr)	30.3	31.4	34.7	32.6
Total Stops	2031	2110	2187	2126
Fuel Used (gal)	36.9	38.0	38.9	38.4

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1962	1912	1901	1832	1940	1909	2011
Vehs Exited	1902	1896	1881	1757	1848	1887	1972
Starting Vehs	262	285	304	228	272	297	322
Ending Vehs	322	301	324	303	364	319	361
Denied Entry Before	0	1	2	0	0	2	0
Denied Entry After	2	1	2	3	2	1	1
Travel Distance (mi)	1016	1002	995	954	1022	1014	1061
Travel Time (hr)	78.0	72.6	72.0	70.5	75.1	76.9	88.3
Total Delay (hr)	41.7	36.8	36.2	36.2	38.5	40.7	50.3
Total Stops	2634	2428	2381	2322	2526	2557	2953
Fuel Used (gal)	44.4	42.7	42.5	41.0	44.0	44.0	48.5

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	1993	1936	1957	1932
Vehs Exited	1888	1883	1889	1878
Starting Vehs	288	292	271	272
Ending Vehs	393	345	339	330
Denied Entry Before	2	1	1	0
Denied Entry After	2	2	1	0
Travel Distance (mi)	1017	995	1032	1011
Travel Time (hr)	84.5	79.8	78.1	77.6
Total Delay (hr)	48.0	44.0	41.0	41.3
Total Stops	3033	2657	2659	2613
Fuel Used (gal)	46.0	44.5	44.7	44.2

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1666	1609	1730	1656	1687	1697	1727
Vehs Exited	1697	1642	1760	1707	1732	1726	1792
Starting Vehs	322	301	324	303	364	319	361
Ending Vehs	291	268	294	252	319	290	296
Denied Entry Before	2	1	2	3	2	1	1
Denied Entry After	3	0	3	2	1	0	0
Travel Distance (mi)	961	921	979	917	949	951	990
Travel Time (hr)	76.1	65.6	71.9	67.8	69.5	69.0	77.5
Total Delay (hr)	41.5	32.5	36.8	34.8	35.4	34.8	42.0
Total Stops	2572	2164	2390	2236	2343	2261	2581
Fuel Used (gal)	42.5	38.8	41.8	39.6	41.1	40.9	43.9

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1660	1637	1585	1663
Vehs Exited	1768	1713	1638	1717
Starting Vehs	393	345	339	330
Ending Vehs	285	269	286	278
Denied Entry Before	2	2	1	0
Denied Entry After	0	2	0	0
Travel Distance (mi)	945	909	918	944
Travel Time (hr)	78.1	73.0	65.5	71.4
Total Delay (hr)	44.0	40.2	32.5	37.4
Total Stops	2660	2381	2179	2372
Fuel Used (gal)	42.9	40.9	38.8	41.1

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1673	1595	1708	1668	1702	1636	1648
Vehs Exited	1666	1609	1711	1643	1744	1669	1661
Starting Vehs	291	268	294	252	319	290	296
Ending Vehs	298	254	291	277	277	257	283
Denied Entry Before	3	0	3	2	1	0	0
Denied Entry After	2	3	2	0	0	2	1
Travel Distance (mi)	947	856	955	908	946	919	918
Travel Time (hr)	70.0	60.8	73.7	65.9	71.6	67.5	69.2
Total Delay (hr)	36.0	30.0	39.3	33.3	37.5	34.3	36.3
Total Stops	2259	2001	2472	2183	2393	2294	2302
Fuel Used (gal)	40.4	36.0	41.9	38.9	41.1	39.4	39.7

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1627	1750	1657	1662
Vehs Exited	1635	1719	1655	1671
Starting Vehs	285	269	286	278
Ending Vehs	277	300	288	272
Denied Entry Before	0	2	0	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	895	967	945	926
Travel Time (hr)	64.3	73.6	67.7	68.4
Total Delay (hr)	32.1	38.7	33.8	35.1
Total Stops	2127	2534	2174	2267
Fuel Used (gal)	38.1	42.3	39.8	39.8

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Denied Del/Veh (s)	2.9	0.4	0.4	4.1	0.2	0.2	0.0	0.0	0.0	1.9	0.6	0.6
Total Delay (hr)	1.1	1.1	0.4	0.1	0.6	0.3	1.5	4.7	0.0	1.0	5.6	2.0
Total Del/Veh (s)	32.8	25.8	27.5	38.3	24.0	22.8	51.5	29.1	35.3	51.6	49.6	47.1
Stop Delay (hr)	1.0	0.9	0.4	0.1	0.6	0.3	1.3	3.5	0.0	0.8	4.2	1.5
Stop Del/Veh (s)	29.7	21.7	25.3	35.2	20.6	21.0	44.6	22.1	30.3	41.3	37.3	36.9
Travel Dist (mi)	31.9	39.1	13.3	1.5	17.1	8.0	21.1	116.1	1.0	24.6	151.3	55.6
Travel Time (hr)	2.3	2.4	0.9	0.1	1.2	0.6	2.3	8.7	0.1	1.8	10.8	4.0
Vehicles Entered	119	146	50	8	94	44	103	571	5	66	404	147
Vehicles Exited	120	147	50	8	95	44	104	567	5	66	397	147
Hourly Exit Rate	120	147	50	8	95	44	104	567	5	66	397	147
Input Volume	117	145	46	9	90	44	106	565	5	65	404	138
% of Volume	102	101	108	89	105	101	98	100	100	102	98	107
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	18.4
Total Del/Veh (s)	37.0
Stop Delay (hr)	14.6
Stop Del/Veh (s)	29.4
Travel Dist (mi)	480.7
Travel Time (hr)	35.2
Vehicles Entered	1757
Vehicles Exited	1750
Hourly Exit Rate	1750
Input Volume	1735
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	2.1	1.6	5.2	1.1	6.5	1.3	17.7
Total Del/Veh (s)	48.6	11.5	52.0	7.2	59.6	53.2	31.5
Stop Delay (hr)	1.9	0.8	4.7	0.7	5.4	1.1	14.4
Stop Del/Veh (s)	43.3	5.7	46.7	4.5	49.3	45.1	25.7
Travel Dist (mi)	13.1	35.7	31.9	49.5	76.6	17.0	223.7
Travel Time (hr)	2.6	2.9	6.7	2.8	9.1	1.9	26.0
Vehicles Entered	155	483	351	538	382	83	1992
Vehicles Exited	151	482	355	536	386	83	1993
Hourly Exit Rate	151	482	355	536	386	83	1993
Input Volume	149	489	347	534	388	83	1991
% of Volume	101	99	102	100	99	100	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.5	0.0	0.0	0.0
Total Delay (hr)	0.2	0.2	0.1	0.7	0.0	1.0	0.0	4.9	0.3	5.2	2.1	0.0
Total Del/Veh (s)	45.9	36.1	9.0	37.3	0.4	13.6	81.2	28.7	14.5	54.4	14.6	7.9
Stop Delay (hr)	0.2	0.2	0.0	0.6	0.0	1.0	0.0	4.1	0.3	4.4	1.3	0.0
Stop Del/Veh (s)	43.9	33.3	8.3	35.2	0.0	13.0	78.6	24.3	12.0	46.2	9.2	4.3
Travel Dist (mi)	0.7	0.8	1.0	3.8	0.1	15.5	0.1	36.5	4.6	30.8	47.0	0.3
Travel Time (hr)	0.2	0.2	0.1	0.8	0.0	1.8	0.1	6.1	0.5	6.6	4.0	0.0
Vehicles Entered	14	16	20	65	4	264	2	606	76	340	514	3
Vehicles Exited	14	17	20	66	4	265	2	607	76	334	513	3
Hourly Exit Rate	14	17	20	66	4	265	2	607	76	334	513	3
Input Volume	16	17	18	65	3	255	3	607	74	344	520	3
% of Volume	89	101	113	101	133	104	67	100	102	97	99	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	14.6
Total Del/Veh (s)	27.1
Stop Delay (hr)	12.2
Stop Del/Veh (s)	22.5
Travel Dist (mi)	141.2
Travel Time (hr)	20.4
Vehicles Entered	1924
Vehicles Exited	1921
Hourly Exit Rate	1921
Input Volume	1924
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.1	2.2	0.6	3.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0
Total Del/Veh (s)	16.9	21.9	7.3	14.7	19.2	6.5	7.4	1.2	0.7	4.3	0.4	0.1
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	15.3	18.6	7.0	13.1	16.3	6.4	4.6	0.0	0.0	2.7	0.0	0.0
Travel Dist (mi)	0.4	0.1	0.5	0.4	0.1	0.9	0.2	123.7	1.6	1.2	20.2	0.0
Travel Time (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.0	4.5	0.1	0.1	0.7	0.0
Vehicles Entered	7	1	10	10	2	23	1	643	8	35	574	1
Vehicles Exited	7	1	10	10	2	23	1	644	8	35	574	1
Hourly Exit Rate	7	1	10	10	2	23	1	644	8	35	574	1
Input Volume	8	1	11	10	2	23	2	646	8	37	576	1
% of Volume	90	100	93	100	89	101	50	100	97	94	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	0.5
Total Del/Veh (s)	1.3
Stop Delay (hr)	0.2
Stop Del/Veh (s)	0.5
Travel Dist (mi)	149.4
Travel Time (hr)	5.7
Vehicles Entered	1315
Vehicles Exited	1316
Hourly Exit Rate	1316
Input Volume	1325
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	4.1	0.1	0.1	0.1	0.0
Total Delay (hr)	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.4
Total Del/Veh (s)	5.2	1.0	1.0	0.6	16.9	8.6	16.5	6.3	1.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Stop Del/Veh (s)	3.3	0.2	0.0	0.0	15.3	8.4	14.6	6.0	0.5
Travel Dist (mi)	0.3	29.8	30.7	0.6	0.3	0.6	2.4	1.0	65.7
Travel Time (hr)	0.0	1.2	1.2	0.0	0.1	0.1	0.2	0.0	2.7
Vehicles Entered	6	610	437	8	7	14	15	6	1103
Vehicles Exited	6	609	437	8	7	14	15	6	1102
Hourly Exit Rate	6	609	437	8	7	14	15	6	1102
Input Volume	7	613	430	7	8	12	16	5	1098
% of Volume	86	99	102	110	85	114	95	114	100
Denied Entry Before	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	4.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.4	0.0	0.0	1.5	0.0	0.1	0.0	0.0	0.0	0.1	2.3
Total Del/Veh (s)	9.9	2.2	1.7	15.6	12.5	10.6	51.2	25.4	9.0	26.0	31.4	7.6
Stop Delay (hr)	0.0	0.0	0.0	0.0	1.1	0.0	0.1	0.0	0.0	0.0	0.1	1.5
Stop Del/Veh (s)	6.5	0.2	0.0	12.2	9.0	8.2	49.4	21.9	8.5	24.0	31.0	5.0
Travel Dist (mi)	0.2	34.0	0.5	0.7	46.8	0.6	0.9	0.5	1.5	0.4	1.9	88.0
Travel Time (hr)	0.0	1.6	0.0	0.1	3.1	0.0	0.2	0.1	0.1	0.0	0.2	5.4
Vehicles Entered	3	607	8	6	437	6	9	5	15	4	17	1117
Vehicles Exited	3	606	8	6	434	6	9	5	15	4	17	1113
Hourly Exit Rate	3	606	8	6	434	6	9	5	15	4	17	1113
Input Volume	4	604	7	5	431	5	11	5	16	5	18	1111
% of Volume	75	100	114	120	101	120	80	105	94	84	93	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0	3.8	0.3	0.4
Total Delay (hr)	1.5	7.6	0.8	0.3	4.1	0.1	3.2	2.4	0.7	0.5	2.4	0.4
Total Del/Veh (s)	60.4	49.5	45.6	55.3	34.2	29.3	59.7	56.8	58.4	59.2	61.9	60.1
Stop Delay (hr)	1.3	6.2	0.7	0.3	3.5	0.1	2.9	2.1	0.6	0.5	2.2	0.4
Stop Del/Veh (s)	52.1	40.4	38.6	51.1	29.2	26.2	54.6	51.1	54.3	55.3	56.5	56.9
Travel Dist (mi)	7.0	44.2	4.9	1.2	23.3	0.9	28.2	21.5	6.1	5.5	25.7	4.7
Travel Time (hr)	1.7	9.1	1.0	0.4	4.9	0.2	4.2	3.1	0.9	0.7	3.3	0.6
Vehicles Entered	86	541	61	22	421	16	192	150	41	29	136	25
Vehicles Exited	85	542	60	22	421	16	192	150	42	29	136	24
Hourly Exit Rate	85	542	60	22	421	16	192	150	42	29	136	24
Input Volume	80	537	60	22	421	17	192	152	37	34	131	24
% of Volume	106	101	100	101	100	96	100	99	114	85	104	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	24.0
Total Del/Veh (s)	49.4
Stop Delay (hr)	20.8
Stop Del/Veh (s)	42.9
Travel Dist (mi)	173.1
Travel Time (hr)	30.2
Vehicles Entered	1720
Vehicles Exited	1719
Hourly Exit Rate	1719
Input Volume	1707
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.1	0.4	3.5	0.1	0.0	0.0	0.4
Total Delay (hr)	0.1	0.3	0.0	0.0	0.2	0.0	0.1	0.7
Total Del/Veh (s)	4.8	3.0	0.4	0.2	13.1	0.7	5.7	2.8
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.2	0.0	0.1	0.3
Stop Del/Veh (s)	2.0	0.5	0.0	0.0	12.1	0.0	5.8	1.3
Travel Dist (mi)	3.8	23.3	25.1	4.9	0.9	0.0	0.8	58.7
Travel Time (hr)	0.3	1.4	0.9	0.3	0.2	0.0	0.1	3.2
Vehicles Entered	62	381	290	57	45	1	39	875
Vehicles Exited	63	385	290	57	45	1	39	880
Hourly Exit Rate	63	385	290	57	45	1	39	880
Input Volume	62	389	281	54	43	2	39	869
% of Volume	102	99	103	106	105	67	101	101
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	2.6	0.3	2.9
Total Del/Veh (s)	9.7	1.7	6.6
Stop Delay (hr)	2.0	0.2	2.2
Stop Del/Veh (s)	7.2	1.3	4.9
Travel Dist (mi)	74.5	10.2	84.7
Travel Time (hr)	6.2	0.7	6.9
Vehicles Entered	972	604	1576
Vehicles Exited	972	604	1576
Hourly Exit Rate	972	604	1576
Input Volume	956	608	1564
% of Volume	102	99	101
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0
Denied Del/Veh (s)	0.8	2.0	3.5	0.0	0.0	0.0	2.1	0.6	0.7	2.6	0.3	0.4
Total Delay (hr)	0.9	5.3	1.4	5.4	3.1	0.4	3.2	17.3	2.5	2.9	9.8	0.3
Total Del/Veh (s)	65.8	70.5	57.5	56.3	56.2	21.0	86.8	43.5	15.5	74.9	34.1	26.9
Stop Delay (hr)	0.8	4.8	1.3	5.1	2.8	0.4	2.9	13.1	1.8	2.7	7.8	0.3
Stop Del/Veh (s)	60.1	63.4	52.4	52.8	51.2	19.3	77.9	33.0	11.4	68.3	26.9	22.1
Travel Dist (mi)	4.8	27.0	8.8	25.4	14.7	4.9	19.6	210.1	84.5	16.5	121.0	5.2
Travel Time (hr)	1.1	6.4	1.9	6.5	3.6	0.6	4.0	24.6	5.8	3.6	14.0	0.6
Vehicles Entered	48	270	88	341	197	65	130	1396	562	138	1013	44
Vehicles Exited	48	270	87	342	198	65	130	1395	563	139	1012	44
Hourly Exit Rate	48	270	87	342	198	65	130	1395	563	139	1012	44
Input Volume	48	276	86	347	196	64	132	1394	543	137	1021	44
% of Volume	99	98	101	99	101	102	99	100	104	101	99	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.8
Denied Del/Veh (s)	0.7
Total Delay (hr)	52.6
Total Del/Veh (s)	43.2
Stop Delay (hr)	43.7
Stop Del/Veh (s)	35.9
Travel Dist (mi)	542.5
Travel Time (hr)	72.6
Vehicles Entered	4292
Vehicles Exited	4293
Hourly Exit Rate	4293
Input Volume	4288
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.1
Total Delay (hr)	0.1	0.0	0.2
Total Del/Veh (s)	3.5	1.5	2.7
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	2.4	0.3	1.6
Travel Dist (mi)	2.6	14.1	16.7
Travel Time (hr)	0.3	0.5	0.8
Vehicles Entered	123	83	206
Vehicles Exited	123	84	207
Hourly Exit Rate	123	84	207
Input Volume	120	82	202
% of Volume	103	102	103
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.1	0.3
Total Del/Veh (s)	1.3	1.1	0.7	1.0
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.1	0.0	0.0
Travel Dist (mi)	67.4	0.6	24.1	92.1
Travel Time (hr)	2.5	0.0	0.9	3.4
Vehicles Entered	615	5	451	1071
Vehicles Exited	614	5	450	1069
Hourly Exit Rate	614	5	450	1069
Input Volume	618	5	443	1065
% of Volume	99	100	102	100
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Delay (hr)	0.4	0.0	0.0	0.2	0.1	0.0	0.6
Total Del/Veh (s)	2.1	3.1	6.7	1.4	17.2	11.3	2.1
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Stop Del/Veh (s)	0.5	2.0	4.0	0.1	15.6	10.9	0.6
Travel Dist (mi)	45.4	0.4	0.3	37.7	0.4	0.5	84.7
Travel Time (hr)	1.9	0.0	0.0	1.8	0.1	0.1	3.8
Vehicles Entered	632	5	3	438	11	12	1101
Vehicles Exited	633	5	3	437	11	12	1101
Hourly Exit Rate	633	5	3	437	11	12	1101
Input Volume	636	5	5	428	10	10	1094
% of Volume	100	100	60	102	107	117	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Delay (hr)	0.2	0.1	0.7	0.1	0.2	0.1	1.4
Total Del/Veh (s)	1.3	0.8	4.3	3.5	7.8	12.0	2.8
Stop Delay (hr)	0.1	0.0	0.4	0.0	0.2	0.1	0.8
Stop Del/Veh (s)	0.4	0.1	2.5	2.4	7.4	11.9	1.7
Travel Dist (mi)	9.7	6.5	37.2	3.5	4.1	1.0	61.9
Travel Time (hr)	0.6	0.5	2.2	0.2	0.5	0.1	4.2
Vehicles Entered	579	394	586	54	108	23	1744
Vehicles Exited	579	394	585	54	108	23	1743
Hourly Exit Rate	579	394	585	54	108	23	1743
Input Volume	568	389	587	54	108	25	1730
% of Volume	102	101	100	100	100	93	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)	12.1	2.9	0.2	1.9	0.8
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	10.6	2.8	0.0	0.1	0.1
Travel Dist (mi)	0.0	0.1	25.1	32.4	57.6
Travel Time (hr)	0.0	0.0	0.9	1.3	2.1
Vehicles Entered	1	3	375	222	601
Vehicles Exited	1	3	375	221	600
Hourly Exit Rate	1	3	375	221	600
Input Volume	2	2	372	216	592
% of Volume	50	150	101	102	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.5		0.0	0.2
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	7.8	3.7	0.4	0.0		0.4	0.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	7.1	3.9	0.0	0.0		0.0	0.0
Travel Dist (mi)	0.0	0.0	10.1	0.0	0.0	14.8	25.0
Travel Time (hr)	0.0	0.0	0.4	0.0	0.0	0.5	0.9
Vehicles Entered	1	1	373	1	0	220	596
Vehicles Exited	1	1	373	1	0	220	596
Hourly Exit Rate	1	1	373	1	0	220	596
Input Volume	1	1	371	1	1	214	589
% of Volume	100	100	101	100	0	103	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1.5
Denied Del/Veh (s)	0.8
Total Delay (hr)	145.0
Total Del/Veh (s)	72.7
Stop Delay (hr)	113.5
Stop Del/Veh (s)	56.9
Travel Dist (mi)	3781.9
Travel Time (hr)	282.3
Vehicles Entered	6896
Vehicles Exited	6907
Hourly Exit Rate	6907
Input Volume	33485
% of Volume	21
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Seminary Dr	4	1.2	24.9	0.2	29
	46	0.3	4.6	0.0	28
	20	1.2	11.2	0.1	26
Ringwood Ave	3	28.7	36.0	0.1	6
Ravenswood Ave	2	7.0	18.2	0.1	19
	1	19.5	43.7	0.2	17
Total		57.9	138.7	0.7	18

Arterial Level of Service: SB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Ravenswood Ave	2	62.4	86.0	0.2	9
	3	4.6	15.5	0.1	22
	20	2.1	9.8	0.1	23
	46	0.8	10.7	0.1	28
	4	0.4	4.7	0.0	28
Total		70.3	126.7	0.5	14

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	170	213	60	185	149	551	160	752
Average Queue (ft)	70	100	8	73	88	260	60	385
95th Queue (ft)	138	181	34	151	167	471	145	677
Link Distance (ft)		1416		961		1023		1985
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	0	0	0	22	3	31	0	40
Queuing Penalty (veh)	0	0	0	2	14	33	0	26

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	396	170	386	253	524
Average Queue (ft)	182	95	246	79	341
95th Queue (ft)	383	228	366	179	498
Link Distance (ft)	390		420	420	1023
Upstream Blk Time (%)	1		0	0	
Queuing Penalty (veh)	9		1	0	
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	31	2			
Queuing Penalty (veh)	151	3			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	SB	SB
Directions Served	L	TR	LT	R	L	T	T	R	T	T	L	T
Maximum Queue (ft)	50	82	115	180	47	288	340	150	20	105	175	394
Average Queue (ft)	14	24	46	87	3	123	230	55	1	10	166	241
95th Queue (ft)	42	61	94	156	26	254	354	156	19	55	194	419
Link Distance (ft)	255	255	257	257		260	260		379	379		420
Upstream Blk Time (%)				0		1	7					1
Queuing Penalty (veh)				0		3	25					3
Storage Bay Dist (ft)					175			100			125	
Storage Blk Time (%)						1	33	0			34	1
Queuing Penalty (veh)						0	25	0			87	4

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	448
Average Queue (ft)	126
95th Queue (ft)	379
Link Distance (ft)	420
Upstream Blk Time (%)	1
Queuing Penalty (veh)	5
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	WB	NB	NB	NB	SB	SB	B20	B20
Directions Served	LTR	LTR	L	T	R	L	TR	T	
Maximum Queue (ft)	44	48	11	10	2	45	33	58	21
Average Queue (ft)	14	19	1	0	0	14	2	3	1
95th Queue (ft)	41	42	7	8	2	38	15	35	13
Link Distance (ft)	274	208		1010			131	260	260
Upstream Blk Time (%)								0	
Queuing Penalty (veh)								0	
Storage Bay Dist (ft)			50		85	80			
Storage Blk Time (%)				0		0	0		
Queuing Penalty (veh)				0		0	0		

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	149	35	33	40	38
Average Queue (ft)	8	1	7	12	17
95th Queue (ft)	62	15	27	37	42
Link Distance (ft)	217	317		249	834
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	LT	R	LTR
Maximum Queue (ft)	92	397	55	38	63
Average Queue (ft)	6	105	14	12	18
95th Queue (ft)	56	290	44	35	47
Link Distance (ft)	232	517	525		577
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	1	0			
Storage Bay Dist (ft)				75	
Storage Blk Time (%)			1		
Queuing Penalty (veh)			0		

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	109	464	320	269	92	252	120	479	134	286
Average Queue (ft)	56	391	115	69	23	211	101	243	43	158
95th Queue (ft)	115	535	302	234	67	304	145	434	119	257
Link Distance (ft)		343	249	249		232		723		997
Upstream Blk Time (%)		29	8	3		22		0		
Queuing Penalty (veh)		198	26	9		101		0		
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	3	50			0	42	30	30	0	26
Queuing Penalty (veh)	17	40			2	9	54	58	0	9

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	SB
Directions Served	LT	R	LR
Maximum Queue (ft)	169	13	74
Average Queue (ft)	39	0	37
95th Queue (ft)	119	8	66
Link Distance (ft)	257		66
Upstream Blk Time (%)			2
Queuing Penalty (veh)			1
Storage Bay Dist (ft)		135	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	309	333	46	43
Average Queue (ft)	87	114	10	9
95th Queue (ft)	261	320	36	34
Link Distance (ft)	318	318	25	25
Upstream Blk Time (%)	0	1	11	9
Queuing Penalty (veh)	0	3	33	29
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	428	250	254	260	307	160	345	771	734	596	265	528
Average Queue (ft)	220	177	126	143	154	53	214	493	453	192	176	345
95th Queue (ft)	387	271	222	234	280	153	409	735	687	453	304	486
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	0				1			2	1	0		0
Queuing Penalty (veh)	0				3			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	9	5	0	0	16	0	0	26			0	21
Queuing Penalty (veh)	19	10	0	0	10	0	3	34			2	29

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	478
Average Queue (ft)	297
95th Queue (ft)	431
Link Distance (ft)	621
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	64	42
Average Queue (ft)	36	2
95th Queue (ft)	55	18
Link Distance (ft)	66	887
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB
Directions Served	TR	LT
Maximum Queue (ft)	15	23
Average Queue (ft)	0	1
95th Queue (ft)	8	19
Link Distance (ft)	517	217
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 36: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	182	63	49
Average Queue (ft)	15	4	18
95th Queue (ft)	91	31	46
Link Distance (ft)	317	390	207
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	NB	SB
Directions Served	T	TR	TR	R	R
Maximum Queue (ft)	52	21	222	88	52
Average Queue (ft)	6	2	43	37	17
95th Queue (ft)	30	17	153	74	44
Link Distance (ft)	25	25	249	193	234
Upstream Blk Time (%)	4	1	0		
Queuing Penalty (veh)	21	5	2		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: Laurel St

Movement	WB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	95
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 44: Laurel St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	29	3
Average Queue (ft)	2	0
95th Queue (ft)	15	3
Link Distance (ft)	85	297
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1123

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	6.5	54.3	52.4	7.5	53.3	52.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	None	Max	None
Avg. Green (s)	6.2	4.6	8.6	6.9	1.6	8.6	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	42	0	0	19	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	27	100	100	48	100	100	0
Cycles with Peds (%)	0	33	96	0	17	11	0

Controller Summary
Average Cycle Length (s): -6.5

Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	2	3	5	6	7	8
Movement(s) Served	NBT	EBR	NBL	SBT	EBL	NBTL
Maximum Green (s)	48.3	72.7	5.0	38.8	34.5	33.7
Minimum Green (s)	10.0	8.0	5.0	7.0	7.0	7.0
Recall	C-Max	Min	None	C-Max	Ped	None
Avg. Green (s)	2.5	-7.4	9.2	1.9	5.2	9.8
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	96	0	0	0
Cycles @ Minimum (%)	0	0	4	0	0	0
Cycles Maxed Out (%)	100	42	0	100	46	46
Cycles with Peds (%)	96	0	0	12	100	29

Controller Summary
Average Cycle Length (s): -6.5

Number of Complete Cycles : 24

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	5.3	79.3	41.4	8.5	76.1	35.4
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Min	C-Max	None	Min	Max
Avg. Green (s)	5.5	11.8	-14.8	7.4	8.2	2.6
g/C Ratio	0.10	0.73	-0.91	0.29	0.51	0.16
Cycles Skipped (%)	71	0	0	38	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	29	60	100	6	60	100
Cycles with Peds (%)	0	60	55	0	45	50

Controller Summary
Average Cycle Length (s): 16.2
Number of Complete Cycles : 16

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	None	None	None	C-Max
Avg. Green (s)	-9.7	0.4	-5.3	-1.0	-13.0	6.5
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	8	0
Cycles @ Minimum (%)	0	0	0	0	8	0
Cycles Maxed Out (%)	100	100	50	79	4	100
Cycles with Peds (%)	0	50	0	75	0	24

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	7:30	7:30	7:30	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	6968	6855	6952	6827	7343	7047	6782
Vehs Exited	6843	6706	6768	6710	7140	6871	6638
Starting Vehs	577	580	541	570	498	515	570
Ending Vehs	702	729	725	687	701	691	714
Denied Entry Before	463	376	374	276	322	353	465
Denied Entry After	1963	1960	1878	1877	1531	1772	2280
Travel Distance (mi)	3929	3883	3923	3928	4116	3938	3870
Travel Time (hr)	1899.4	1843.7	1744.8	1723.2	1600.7	1681.4	2062.0
Total Delay (hr)	1756.8	1703.1	1602.8	1580.9	1451.6	1538.2	1921.1
Total Stops	12320	12104	11907	11847	12483	12010	11573
Fuel Used (gal)	534.4	521.5	500.0	494.6	472.8	485.9	570.5

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	7:30	7:30	7:30	7:30
End Time	9:00	9:00	9:00	9:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	6849	6935	6987	6948
Vehs Exited	6730	6761	6814	6795
Starting Vehs	565	507	522	535
Ending Vehs	684	681	695	691
Denied Entry Before	286	311	316	353
Denied Entry After	1999	1747	1868	1886
Travel Distance (mi)	3862	3850	3924	3922
Travel Time (hr)	1787.4	1669.3	1725.1	1773.7
Total Delay (hr)	1647.2	1529.6	1582.8	1631.4
Total Stops	11767	11651	11974	11964
Fuel Used (gal)	507.1	481.3	495.7	506.4

Interval #0 Information Seeding

Start Time	7:30
End Time	8:00
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	8:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1652	1621	1672	1575	1703	1734	1599
Vehs Exited	1697	1661	1695	1638	1686	1679	1666
Starting Vehs	577	580	541	570	498	515	570
Ending Vehs	532	540	518	507	515	570	503
Denied Entry Before	463	376	374	276	322	353	465
Denied Entry After	781	644	655	681	609	570	850
Travel Distance (mi)	986	966	982	975	984	984	970
Travel Time (hr)	287.4	270.1	258.7	243.3	235.7	247.2	299.2
Total Delay (hr)	251.7	235.1	223.1	208.0	200.0	211.3	264.0
Total Stops	2867	2737	2745	2605	2638	2901	2675
Fuel Used (gal)	91.0	86.8	84.4	80.7	79.2	82.0	93.7

Interval #1 Information Recording

Start Time	8:00
End Time	8:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1695	1685	1697	1660
Vehs Exited	1666	1699	1679	1677
Starting Vehs	565	507	522	535
Ending Vehs	594	493	540	526
Denied Entry Before	286	311	316	353
Denied Entry After	562	593	608	655
Travel Distance (mi)	959	943	973	972
Travel Time (hr)	249.4	230.3	240.8	256.2
Total Delay (hr)	214.7	196.0	205.6	221.0
Total Stops	2923	2610	2746	2742
Fuel Used (gal)	81.8	77.5	80.4	83.8

Interval #2 Information

Start Time	8:15
End Time	8:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2050	1917	2051	2002	2119	2019	1983
Vehs Exited	1801	1729	1851	1764	1852	1866	1731
Starting Vehs	532	540	518	507	515	570	503
Ending Vehs	781	728	718	745	782	723	755
Denied Entry Before	781	644	655	681	609	570	850
Denied Entry After	1325	1267	1152	1190	1046	1117	1499
Travel Distance (mi)	1016	1023	1081	1040	1072	1051	1026
Travel Time (hr)	431.9	397.6	381.6	390.9	361.1	371.9	453.4
Total Delay (hr)	394.9	360.4	342.3	353.1	322.1	333.6	416.0
Total Stops	3444	3195	3203	3330	3466	3335	3203
Fuel Used (gal)	124.3	117.0	114.8	115.8	110.1	112.3	129.6

Interval #2 Information

Start Time	8:15
End Time	8:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2028	2074	2025	2026
Vehs Exited	1837	1830	1826	1806
Starting Vehs	594	493	540	526
Ending Vehs	785	737	739	742
Denied Entry Before	562	593	608	655
Denied Entry After	1159	1102	1159	1199
Travel Distance (mi)	1039	1047	1047	1044
Travel Time (hr)	383.9	369.4	379.6	392.1
Total Delay (hr)	346.1	331.4	341.5	354.1
Total Stops	3226	3396	3398	3318
Fuel Used (gal)	114.2	111.2	114.0	116.3

Interval #3 Information

Start Time	8:30
End Time	8:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1590	1555	1598	1584	1745	1639	1550
Vehs Exited	1719	1621	1636	1665	1852	1676	1612
Starting Vehs	781	728	718	745	782	723	755
Ending Vehs	652	662	680	664	675	686	693
Denied Entry Before	1325	1267	1152	1190	1046	1117	1499
Denied Entry After	1729	1717	1552	1530	1315	1453	1964
Travel Distance (mi)	994	924	919	938	1045	947	936
Travel Time (hr)	548.5	541.8	503.3	499.5	468.7	484.2	604.7
Total Delay (hr)	512.4	508.3	470.1	465.6	431.0	449.9	570.5
Total Stops	2931	2906	2903	2865	3194	2963	2883
Fuel Used (gal)	150.7	147.6	139.0	138.5	134.7	135.1	162.2

Interval #3 Information

Start Time	8:30
End Time	8:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1568	1490	1581	1587
Vehs Exited	1660	1619	1709	1675
Starting Vehs	785	737	739	742
Ending Vehs	693	608	611	652
Denied Entry Before	1159	1102	1159	1199
Denied Entry After	1611	1500	1567	1591
Travel Distance (mi)	929	906	957	950
Travel Time (hr)	525.2	493.6	505.4	517.5
Total Delay (hr)	491.5	460.9	470.7	483.1
Total Stops	2851	2586	2868	2890
Fuel Used (gal)	143.6	136.5	140.2	142.8

Interval #4 Information

Start Time	8:45
End Time	9:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1676	1762	1631	1666	1776	1655	1650
Vehs Exited	1626	1695	1586	1643	1750	1650	1629
Starting Vehs	652	662	680	664	675	686	693
Ending Vehs	702	729	725	687	701	691	714
Denied Entry Before	1729	1717	1552	1530	1315	1453	1964
Denied Entry After	1963	1960	1878	1877	1531	1772	2280
Travel Distance (mi)	933	970	941	975	1015	956	937
Travel Time (hr)	631.7	634.3	601.2	589.6	535.2	578.1	704.7
Total Delay (hr)	597.8	599.3	567.2	554.2	498.5	543.3	670.6
Total Stops	3078	3266	3056	3047	3185	2811	2812
Fuel Used (gal)	168.3	170.1	161.8	159.6	148.8	156.5	185.0

Interval #4 Information

Start Time	8:45
End Time	9:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1558	1686	1684	1674
Vehs Exited	1567	1613	1600	1636
Starting Vehs	693	608	611	652
Ending Vehs	684	681	695	691
Denied Entry Before	1611	1500	1567	1591
Denied Entry After	1999	1747	1868	1886
Travel Distance (mi)	935	954	947	956
Travel Time (hr)	628.8	575.9	599.4	607.9
Total Delay (hr)	594.9	541.3	565.0	573.2
Total Stops	2767	3059	2962	3007
Fuel Used (gal)	167.4	156.1	161.1	163.5

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	4.4	1.1
Denied Del/Veh (s)	2.8	0.4	0.4	3.1	0.4	0.4	0.2	0.0	0.0	34.4	33.6	33.8
Total Delay (hr)	1.7	2.1	0.6	0.6	2.4	1.5	0.4	1.2	0.2	8.3	26.9	6.1
Total Del/Veh (s)	74.8	34.6	34.9	55.7	40.8	38.9	27.0	18.7	20.5	192.3	202.6	193.7
Stop Delay (hr)	1.6	1.8	0.6	0.5	2.0	1.3	0.4	0.9	0.1	7.4	24.2	5.5
Stop Del/Veh (s)	70.9	28.9	31.5	50.0	33.3	33.8	23.1	14.3	17.8	172.9	182.2	175.9
Travel Dist (mi)	20.6	58.3	17.3	8.2	47.3	30.2	11.0	43.6	5.6	54.9	168.1	40.3
Travel Time (hr)	2.4	4.1	1.3	0.9	4.0	2.6	0.8	2.7	0.4	11.7	37.0	8.6
Vehicles Entered	77	217	64	36	211	135	55	220	28	151	464	110
Vehicles Exited	78	216	65	37	210	134	55	221	28	143	433	104
Hourly Exit Rate	78	216	65	37	210	134	55	221	28	143	433	104
Input Volume	81	209	63	39	205	133	113	444	47	156	472	111
% of Volume	97	103	104	94	102	101	49	50	60	92	92	94
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	4	9	3

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	7.1
Denied Del/Veh (s)	14.4
Total Delay (hr)	51.9
Total Del/Veh (s)	103.5
Stop Delay (hr)	46.2
Stop Del/Veh (s)	92.2
Travel Dist (mi)	505.3
Travel Time (hr)	76.5
Vehicles Entered	1768
Vehicles Exited	1724
Hourly Exit Rate	1724
Input Volume	2072
% of Volume	83
Denied Entry Before	0
Denied Entry After	16

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.6
Denied Del/Veh (s)	0.3	0.0	0.5	0.1	0.0	3.8	1.1	1.3
Total Delay (hr)	1.2	0.0	0.9	3.6	0.4	22.9	5.0	34.0
Total Del/Veh (s)	39.0	1.7	9.0	43.4	7.3	181.8	175.2	80.4
Stop Delay (hr)	1.1	0.0	0.5	3.4	0.3	20.1	4.5	29.9
Stop Del/Veh (s)	35.3	0.1	5.0	40.9	6.4	159.6	155.5	70.6
Travel Dist (mi)	8.9	0.6	25.2	26.2	15.9	87.5	19.8	184.2
Travel Time (hr)	1.6	0.0	1.9	4.9	1.0	26.4	5.8	41.7
Vehicles Entered	110	13	356	295	184	437	99	1494
Vehicles Exited	110	13	356	292	183	425	96	1475
Hourly Exit Rate	110	13	356	292	183	425	96	1475
Input Volume	120	19	388	408	496	470	104	2006
% of Volume	91	69	92	72	37	90	92	74
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	1	0	1

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.3	0.3	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.1	0.6	0.7	0.2	97.0	77.3	55.5	0.2	0.0	0.0
Total Delay (hr)	2.4	0.7	0.0	1.6	1.6	0.7	13.5	1.1	0.0	3.5	3.4	0.3
Total Del/Veh (s)	141.0	138.9	3.6	44.8	35.0	8.2	495.3	39.5	1.8	61.5	23.4	12.5
Stop Delay (hr)	2.4	0.6	0.0	1.5	1.4	0.6	13.6	1.1	0.0	3.1	2.5	0.2
Stop Del/Veh (s)	138.3	134.7	3.1	41.5	31.4	7.9	498.7	38.5	1.6	55.0	17.4	9.5
Travel Dist (mi)	18.0	4.9	4.3	7.3	8.3	16.3	5.1	6.2	1.3	18.0	46.2	8.1
Travel Time (hr)	3.1	0.8	0.2	2.0	1.9	1.6	16.1	3.6	0.4	4.3	5.2	0.7
Vehicles Entered	60	16	14	129	161	290	85	101	21	198	514	88
Vehicles Exited	61	16	14	127	159	289	84	101	21	200	517	89
Hourly Exit Rate	61	16	14	127	159	289	84	101	21	200	517	89
Input Volume	62	16	14	136	158	289	398	538	105	222	566	91
% of Volume	99	102	102	93	101	100	21	19	20	90	91	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	5	5	1	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	5.1
Denied Del/Veh (s)	10.9
Total Delay (hr)	28.8
Total Del/Veh (s)	60.5
Stop Delay (hr)	27.1
Stop Del/Veh (s)	57.1
Travel Dist (mi)	143.9
Travel Time (hr)	39.8
Vehicles Entered	1677
Vehicles Exited	1678
Hourly Exit Rate	1678
Input Volume	2594
% of Volume	65
Denied Entry Before	0
Denied Entry After	11

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	1.1	3.6	0.5	1.3	99.3	630.8	3.7	0.0	0.0	0.0	740.2
Denied Del/Veh (s)	216.9	203.0	257.4	147.6	1833.7	1873.5	1654.2	0.0	0.0	0.0	1224.6
Total Delay (hr)	14.5	31.9	4.9	28.6	14.2	86.4	0.2	0.3	0.1	0.0	181.2
Total Del/Veh (s)	2485.2	2088.3	2221.7	2639.6	1063.3	1076.1	858.9	54.2	0.9	0.3	590.8
Stop Delay (hr)	14.5	31.9	4.9	28.6	14.5	87.9	0.2	0.3	0.0	0.0	182.8
Stop Del/Veh (s)	2483.5	2086.0	2219.8	2637.5	1084.0	1095.5	879.8	52.8	0.0	0.0	596.1
Travel Dist (mi)	2.3	6.9	0.4	2.0	15.3	90.3	0.3	0.7	19.9	1.9	139.9
Travel Time (hr)	15.7	35.7	5.5	30.0	114.0	720.2	3.9	0.3	0.8	0.1	926.2
Vehicles Entered	14	49	5	26	36	200	1	20	567	54	972
Vehicles Exited	2	6	1	2	33	200	0	20	567	54	885
Hourly Exit Rate	2	6	1	2	33	200	0	20	567	54	885
Input Volume	20	61	7	33	160	975	6	21	614	62	1959
% of Volume	10	10	14	6	21	21	0	95	92	87	45
Denied Entry Before	0	0	0	0	40	229	1	0	0	0	270
Denied Entry After	4	14	2	6	159	1012	7	0	0	0	1204

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.0	0.3	0.1	0.0	0.1	0.1	0.6
Total Del/Veh (s)	6.0	1.3	1.0	0.2	19.3	9.2	1.8
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.1	0.2
Stop Del/Veh (s)	3.4	0.1	0.2	0.0	17.2	8.7	0.6
Travel Dist (mi)	0.2	39.5	28.2	0.2	4.0	3.7	75.9
Travel Time (hr)	0.0	1.6	1.1	0.0	0.3	0.2	3.2
Vehicles Entered	3	772	395	3	25	24	1222
Vehicles Exited	3	773	397	3	25	24	1225
Hourly Exit Rate	3	773	397	3	25	24	1225
Input Volume	5	872	514	3	26	22	1442
% of Volume	57	89	77	100	96	108	85
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0
Total Delay (hr)	0.0	0.6	0.0	0.0	0.5	0.0	0.1	0.2	0.1	0.1	1.6
Total Del/Veh (s)	6.5	2.5	1.8	10.2	4.4	1.2	34.6	20.2	24.5	15.3	4.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.1	0.1	0.8
Stop Del/Veh (s)	3.0	0.1	0.1	7.8	2.0	0.5	32.4	19.7	22.6	14.8	2.1
Travel Dist (mi)	0.1	46.5	0.5	0.5	44.8	0.1	2.9	7.5	1.6	5.2	109.8
Travel Time (hr)	0.0	2.2	0.0	0.0	2.0	0.0	0.2	0.5	0.1	0.3	5.5
Vehicles Entered	2	826	9	5	418	1	14	36	9	29	1349
Vehicles Exited	2	825	9	5	419	1	14	37	9	29	1350
Hourly Exit Rate	2	825	9	5	419	1	14	37	9	29	1350
Input Volume	3	950	11	6	527	1	15	40	10	27	1590
% of Volume	62	87	84	80	80	100	93	93	88	108	85
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	4.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	24.3	23.8	16.2	0.4	0.2	0.0	0.5	0.2	0.2	2.6	0.5	0.4
Total Delay (hr)	0.3	11.3	0.9	0.2	2.7	0.1	2.6	1.7	0.3	1.7	1.7	0.7
Total Del/Veh (s)	62.0	58.7	55.0	49.5	22.3	17.9	49.4	38.3	41.8	41.1	43.4	43.8
Stop Delay (hr)	0.2	9.1	0.8	0.2	2.1	0.1	2.4	1.5	0.2	1.5	1.5	0.6
Stop Del/Veh (s)	51.8	47.4	45.9	45.6	17.9	15.6	45.3	33.8	38.7	36.5	37.2	40.0
Travel Dist (mi)	1.3	53.3	4.8	0.8	23.0	0.9	26.2	20.3	3.0	40.7	38.7	15.3
Travel Time (hr)	0.5	17.6	1.4	0.2	3.5	0.1	3.7	2.4	0.4	3.3	3.1	1.3
Vehicles Entered	17	682	59	15	430	16	185	156	21	148	140	55
Vehicles Exited	16	682	60	14	430	16	186	155	21	149	142	56
Hourly Exit Rate	16	682	60	14	430	16	186	155	21	149	142	56
Input Volume	21	820	71	17	524	21	182	152	22	150	142	55
% of Volume	77	83	85	82	82	75	102	102	97	99	100	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	5.1
Denied Del/Veh (s)	9.5
Total Delay (hr)	24.2
Total Del/Veh (s)	44.6
Stop Delay (hr)	20.3
Stop Del/Veh (s)	37.5
Travel Dist (mi)	228.2
Travel Time (hr)	37.4
Vehicles Entered	1924
Vehicles Exited	1927
Hourly Exit Rate	1927
Input Volume	2177
% of Volume	89
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.2	0.4	0.1	0.0	0.3	1.0
Denied Del/Veh (s)	2.0	1.5	1.4	3.3	6.2	0.0	6.6	2.9
Total Delay (hr)	1.4	0.8	0.3	0.3	0.3	0.0	0.4	3.5
Total Del/Veh (s)	35.3	25.7	2.6	2.9	20.4	2.1	9.8	9.9
Stop Delay (hr)	1.3	0.7	0.0	0.1	0.3	0.0	0.4	2.9
Stop Del/Veh (s)	32.9	22.4	0.4	0.9	20.0	1.1	10.3	8.1
Travel Dist (mi)	8.5	6.5	39.4	40.4	1.1	0.3	2.7	98.8
Travel Time (hr)	1.9	1.1	1.8	2.3	0.5	0.0	0.9	8.5
Vehicles Entered	139	107	390	401	60	24	150	1271
Vehicles Exited	139	107	392	402	60	24	150	1274
Hourly Exit Rate	139	107	392	402	60	24	150	1274
Input Volume	192	160	398	400	63	26	148	1387
% of Volume	72	67	98	101	96	94	102	92
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	11.6	0.6	12.2
Total Del/Veh (s)	41.8	3.1	26.1
Stop Delay (hr)	10.3	0.5	10.8
Stop Del/Veh (s)	37.2	2.6	23.1
Travel Dist (mi)	74.8	12.0	86.9
Travel Time (hr)	15.1	1.1	16.2
Vehicles Entered	978	683	1661
Vehicles Exited	975	683	1658
Hourly Exit Rate	975	683	1658
Input Volume	1171	772	1943
% of Volume	83	88	85
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	6.7	32.7	7.7	0.0	0.0	0.0	5.0	38.6	26.4	52.4	200.3	3.7
Denied Del/Veh (s)	378.5	354.6	367.3	0.0	0.0	0.0	168.3	156.8	159.2	716.9	717.4	706.6
Total Delay (hr)	3.8	20.1	4.0	7.4	3.6	0.3	2.2	12.6	26.7	25.7	7.5	0.1
Total Del/Veh (s)	246.6	250.8	222.6	61.2	62.6	17.5	78.2	52.8	166.3	498.0	40.5	33.1
Stop Delay (hr)	3.7	19.2	3.8	6.9	3.3	0.2	2.0	10.5	25.6	25.5	6.1	0.1
Stop Del/Veh (s)	236.5	238.9	212.7	56.8	57.3	15.3	71.1	44.0	159.6	494.1	32.9	27.0
Travel Dist (mi)	5.2	27.2	6.2	31.7	15.0	4.1	15.1	124.5	82.4	19.3	77.1	1.4
Travel Time (hr)	10.8	53.7	11.9	8.7	4.1	0.5	7.8	55.5	56.2	78.8	210.4	3.9
Vehicles Entered	53	274	62	426	202	55	100	831	557	163	643	12
Vehicles Exited	52	273	61	429	202	56	100	821	544	162	647	12
Hourly Exit Rate	52	273	61	429	202	56	100	821	544	162	647	12
Input Volume	64	326	70	489	221	62	108	877	594	250	953	18
% of Volume	81	84	87	88	91	91	93	94	92	65	68	68
Denied Entry Before	1	5	1	0	0	0	0	1	1	16	57	1
Denied Entry After	11	58	13	0	0	0	8	56	39	100	362	7

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	373.5
Denied Del/Veh (s)	333.5
Total Delay (hr)	114.1
Total Del/Veh (s)	116.9
Stop Delay (hr)	106.9
Stop Del/Veh (s)	109.5
Travel Dist (mi)	409.1
Travel Time (hr)	502.3
Vehicles Entered	3378
Vehicles Exited	3359
Hourly Exit Rate	3359
Input Volume	4033
% of Volume	83
Denied Entry Before	83
Denied Entry After	654

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.2
Total Delay (hr)	0.6	0.4	1.1
Total Del/Veh (s)	4.0	7.5	4.9
Stop Delay (hr)	0.5	0.3	0.8
Stop Del/Veh (s)	3.0	5.5	3.7
Travel Dist (mi)	11.0	34.8	45.8
Travel Time (hr)	1.4	1.6	3.0
Vehicles Entered	573	207	780
Vehicles Exited	572	207	779
Hourly Exit Rate	572	207	779
Input Volume	624	211	834
% of Volume	92	98	93
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.7	0.1	0.1	0.3	0.1	0.0	1.3
Total Del/Veh (s)	3.2	2.2	13.9	3.1	30.8	11.5	3.5
Stop Delay (hr)	0.0	0.0	0.1	0.2	0.1	0.0	0.4
Stop Del/Veh (s)	0.1	0.1	11.7	1.7	29.1	11.4	1.0
Travel Dist (mi)	80.9	13.8	1.0	20.1	0.8	0.2	116.8
Travel Time (hr)	3.5	0.6	0.1	1.0	0.1	0.0	5.4
Vehicles Entered	772	130	21	398	10	3	1334
Vehicles Exited	774	130	21	398	10	3	1336
Hourly Exit Rate	774	130	21	398	10	3	1336
Input Volume	874	153	26	508	10	3	1574
% of Volume	89	85	82	78	98	100	85
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0
Total Delay (hr)	0.5	0.2	0.1	0.0	0.8
Total Del/Veh (s)	3.7	2.2	1.1	7.2	2.5
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	0.2	0.1	0.1	7.2	0.1
Travel Dist (mi)	33.2	22.4	33.4	0.3	89.2
Travel Time (hr)	1.6	1.2	1.5	0.0	4.4
Vehicles Entered	491	320	395	3	1209
Vehicles Exited	492	321	399	3	1215
Hourly Exit Rate	492	321	399	3	1215
Input Volume	544	357	520	3	1424
% of Volume	91	90	77	100	85
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.0	0.0	0.9	0.4	0.1	0.1	0.4
Total Delay (hr)	0.7	0.0	3.4	0.1	0.0	0.4	4.7
Total Del/Veh (s)	3.6	0.6	18.5	19.2	3.9	34.0	9.8
Stop Delay (hr)	0.4	0.0	2.8	0.1	0.0	0.4	3.7
Stop Del/Veh (s)	2.0	0.0	15.0	16.8	3.7	33.6	7.7
Travel Dist (mi)	12.6	4.6	40.6	1.1	0.6	1.8	61.3
Travel Time (hr)	1.2	0.3	5.3	0.2	0.0	0.5	7.5
Vehicles Entered	714	261	669	18	14	43	1719
Vehicles Exited	713	262	666	18	14	43	1716
Hourly Exit Rate	713	262	666	18	14	43	1716
Input Volume	861	309	754	23	14	45	2006
% of Volume	83	85	88	79	98	95	86
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Total Del/Veh (s)	6.0	3.5	0.3	0.1	4.9	2.0	1.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	5.4	3.8	0.0	0.0	1.7	0.2	0.5
Travel Dist (mi)	0.3	0.5	20.4	1.0	0.8	31.0	54.0
Travel Time (hr)	0.1	0.1	0.7	0.0	0.0	1.2	2.2
Vehicles Entered	23	36	303	15	6	215	598
Vehicles Exited	23	36	303	15	6	215	598
Hourly Exit Rate	23	36	303	15	6	215	598
Input Volume	24	35	298	14	7	228	606
% of Volume	97	103	102	105	83	94	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.4		0.0	0.2
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	6.2	3.9	0.3	0.0		0.4	0.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	4.9	4.1	0.0	0.0		0.1	0.1
Travel Dist (mi)	0.0	0.1	9.3	0.1	0.0	15.4	24.9
Travel Time (hr)	0.0	0.0	0.4	0.0	0.0	0.6	0.9
Vehicles Entered	1	3	315	2	0	234	555
Vehicles Exited	1	3	315	2	0	233	554
Hourly Exit Rate	1	3	315	2	0	233	554
Input Volume	2	3	309	1	1	247	563
% of Volume	50	100	102	200	0	94	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	1132.9
Denied Del/Veh (s)	461.7
Total Delay (hr)	498.5
Total Del/Veh (s)	239.7
Stop Delay (hr)	465.5
Stop Del/Veh (s)	223.9
Travel Dist (mi)	3922.3
Travel Time (hr)	1773.7
Vehicles Entered	6948
Vehicles Exited	6795
Hourly Exit Rate	6795
Input Volume	41314
% of Volume	16
Denied Entry Before	353
Denied Entry After	1886

Arterial Level of Service: NB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Seminary Dr	4	1076.1	8971.1	0.5	1
	46	116.0	120.4	0.0	1
	20	319.7	328.9	0.1	1
Ringwood Ave	3	39.5	127.1	0.1	5
Ravenswood Ave	2	2.4	12.6	0.1	27
	1	25.4	48.6	0.2	15
Total		1579.1	9608.7	0.9	2

Arterial Level of Service: SB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Ravenswood Ave	2	180.0	207.4	0.2	4
	3	16.3	27.0	0.1	13
	20	1.6	9.2	0.1	24
	46	0.8	10.9	0.1	28
	4	0.9	5.1	0.0	25
Total		199.5	259.7	0.5	7

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	245	411	72	475	137	265	160	1973
Average Queue (ft)	80	174	31	230	40	100	112	1255
95th Queue (ft)	189	332	72	431	95	204	213	2416
Link Distance (ft)		1416		1181		1022		1985
Upstream Blk Time (%)								24
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	1	4	7	47		5	1	57
Queuing Penalty (veh)	4	3	26	19		6	3	89

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	280	170	337	145	1037
Average Queue (ft)	104	75	192	42	901
95th Queue (ft)	236	200	308	105	1262
Link Distance (ft)	384		425	425	1022
Upstream Blk Time (%)	0		0		5
Queuing Penalty (veh)	1		1		30
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	18	2			
Queuing Penalty (veh)	70	2			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	B46	SB
Directions Served	LT	R	LT	R	L	T	T	R	T	T	T	L
Maximum Queue (ft)	364	41	267	175	200	351	69	16	468	453	222	175
Average Queue (ft)	111	9	170	71	199	326	9	2	451	213	195	142
95th Queue (ft)	303	33	262	128	202	336	42	10	467	536	245	204
Link Distance (ft)	1597	1597	256	256		253	253		385	385	128	
Upstream Blk Time (%)			2	0		99			98	1	89	
Queuing Penalty (veh)			5	0		509			501	4	910	
Storage Bay Dist (ft)					175			100				125
Storage Blk Time (%)					100	1	0					22
Queuing Penalty (veh)					263	6	0					61

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	396	432
Average Queue (ft)	204	103
95th Queue (ft)	348	321
Link Distance (ft)	425	425
Upstream Blk Time (%)	1	3
Queuing Penalty (veh)	6	14
Storage Bay Dist (ft)		
Storage Blk Time (%)	12	
Queuing Penalty (veh)	28	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	EB	WB	NB	NB	NB	SB	SB	B20
Directions Served	LT	R	LTR	L	T	R	L	TR	T
Maximum Queue (ft)	1503	69	969	75	2429	40	64	32	2
Average Queue (ft)	1031	6	731	33	2394	1	17	2	0
95th Queue (ft)	1835	48	1158	90	2410	24	50	24	2
Link Distance (ft)	1511		1004		2375			128	253
Upstream Blk Time (%)	32		28		100			0	
Queuing Penalty (veh)	0		0		0			0	
Storage Bay Dist (ft)		90		50		85	80		
Storage Blk Time (%)	98	1		1	90		0		
Queuing Penalty (veh)	60	0		6	150		2		

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	94	70	81
Average Queue (ft)	5	3	30
95th Queue (ft)	47	28	62
Link Distance (ft)	213	324	834
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	41	192	93	84
Average Queue (ft)	2	44	34	24
95th Queue (ft)	27	146	77	59
Link Distance (ft)	233	520	1096	943
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	93	471	338	192	94	251	120	395	134	334
Average Queue (ft)	16	445	279	15	19	173	98	161	101	152
95th Queue (ft)	64	488	429	114	61	296	143	339	159	285
Link Distance (ft)		344	246	246		233		719		1459
Upstream Blk Time (%)		49	33	1		8				
Queuing Penalty (veh)		428	144	5		42				
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	0	57			0	31	26	15	8	17
Queuing Penalty (veh)	0	12			1	5	43	28	15	27

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	264	141	138	102
Average Queue (ft)	136	12	30	61
95th Queue (ft)	264	104	94	94
Link Distance (ft)	256	530		65
Upstream Blk Time (%)	3	0		15
Queuing Penalty (veh)	12	0		33
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		0	1	
Queuing Penalty (veh)		1	3	

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	359	372	53	47
Average Queue (ft)	302	297	20	16
95th Queue (ft)	397	453	51	45
Link Distance (ft)	318	318	34	34
Upstream Blk Time (%)	24	28	24	19
Queuing Penalty (veh)	140	166	91	74
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	575	250	299	338	326	160	344	810	826	841	265	664
Average Queue (ft)	536	243	172	189	168	47	152	477	691	753	261	637
95th Queue (ft)	614	272	309	335	331	151	343	864	1037	992	271	653
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	81		0	2	3			2	32	63		97
Queuing Penalty (veh)	0		0	7	13			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	76	38	1	4	22	0	0	16			94	3
Queuing Penalty (veh)	177	87	2	10	14	0	0	17			448	7

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	656
Average Queue (ft)	476
95th Queue (ft)	852
Link Distance (ft)	621
Upstream Blk Time (%)	4
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	97	159
Average Queue (ft)	68	26
95th Queue (ft)	87	100
Link Distance (ft)	65	887
Upstream Blk Time (%)	7	
Queuing Penalty (veh)	39	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (ft)	38	217	37	34
Average Queue (ft)	2	45	10	3
95th Queue (ft)	15	157	34	18
Link Distance (ft)	520	213	447	447
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		4		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 36: Ravenswood Ave

Movement	EB	NB
Directions Served	TR	R
Maximum Queue (ft)	40	31
Average Queue (ft)	3	3
95th Queue (ft)	48	18
Link Distance (ft)	324	448
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	B27	NB	SB
Directions Served	T	TR	TR	T	R	R
Maximum Queue (ft)	104	11	358	344	33	106
Average Queue (ft)	46	1	206	82	10	33
95th Queue (ft)	98	7	458	285	33	75
Link Distance (ft)	34	34	246	344	222	220
Upstream Blk Time (%)	25	0	16	1		
Queuing Penalty (veh)	148	1	118	4		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 42: Laurel St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	64	42
Average Queue (ft)	30	3
95th Queue (ft)	55	22
Link Distance (ft)	69	719
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Laurel St

Movement	WB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	4
95th Queue (ft)	20
Link Distance (ft)	90
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 5146

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	12.1	52.7	48.4	7.2	57.6	48.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	None	Max	None
Avg. Green (s)	8.4	10.8	-1.0	6.4	-12.4	-1.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	35	0	0	42	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	8	100	100	23	100	100	0
Cycles with Peds (%)	0	35	96	0	15	12	0

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	2	3	5	6	7	8
Movement(s) Served	NBT	EBR	NBL	SBT	EBL	NBTL
Maximum Green (s)	50.5	70.5	5.1	40.9	33.0	33.0
Minimum Green (s)	10.0	8.0	5.0	7.0	7.0	7.0
Recall	C-Max	Min	None	C-Max	Max	None
Avg. Green (s)	0.1	-5.1	5.1	-9.5	10.2	7.4
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	100	100	100	100	88
Cycles with Peds (%)	96	0	0	27	93	38

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	4.9	39.5	23.8	4.9	39.5	23.2
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Max	C-Max	None	Max	Max
Avg. Green (s)	5.1	5.5	3.3	6.4	5.9	2.7
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	82	0	0	89	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	18	100	100	11	100	100
Cycles with Peds (%)	0	42	13	0	19	22

Controller Summary

Average Cycle Length (s): -7.0
Number of Complete Cycles : 28

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	Max	Max	None	C-Max
Avg. Green (s)	-12.4	0.4	-4.3	0.7	-10.9	4.3
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	100	100	100	100	100
Cycles with Peds (%)	0	55	0	75	0	29

Controller Summary

Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:30	4:30	4:30	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	7862	8086	7915	7995	7866	7689	7960
Vehs Exited	7777	8113	7835	8067	7756	7738	7998
Starting Vehs	488	557	521	589	540	600	554
Ending Vehs	573	530	601	517	650	551	516
Denied Entry Before	78	40	60	41	31	120	88
Denied Entry After	644	410	524	430	710	802	430
Travel Distance (mi)	4920	5146	4993	5127	4907	4868	5117
Travel Time (hr)	876.8	776.7	803.0	875.5	940.6	1030.0	777.9
Total Delay (hr)	701.0	592.7	624.6	691.9	765.6	855.6	595.4
Total Stops	14396	14540	14258	16227	15825	14524	12885
Fuel Used (gal)	325.4	309.1	310.4	331.7	340.5	361.1	307.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	7861	8077	7942	7924
Vehs Exited	7911	8023	7924	7914
Starting Vehs	501	479	496	528
Ending Vehs	451	533	514	531
Denied Entry Before	25	40	46	56
Denied Entry After	332	399	423	508
Travel Distance (mi)	5022	5104	5096	5030
Travel Time (hr)	700.6	784.2	735.9	830.1
Total Delay (hr)	521.0	601.6	553.8	650.3
Total Stops	14280	14302	14117	14535
Fuel Used (gal)	288.6	310.2	297.9	318.3

Interval #0 Information Seeding

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1999	1958	1955	1876	1946	1924	1847
Vehs Exited	1959	2004	1944	1940	1937	1950	1980
Starting Vehs	488	557	521	589	540	600	554
Ending Vehs	528	511	532	525	549	574	421
Denied Entry Before	78	40	60	41	31	120	88
Denied Entry After	108	110	120	171	115	226	155
Travel Distance (mi)	1257	1283	1250	1245	1235	1256	1234
Travel Time (hr)	149.3	148.5	141.7	162.2	146.3	186.0	151.2
Total Delay (hr)	104.4	102.8	97.1	117.5	102.2	141.1	107.1
Total Stops	3441	3460	3138	3613	3628	3826	3226
Fuel Used (gal)	65.8	66.9	63.9	69.0	65.0	75.0	66.2

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1866	1907	1975	1924
Vehs Exited	1862	1917	1987	1944
Starting Vehs	501	479	496	528
Ending Vehs	505	469	484	503
Denied Entry Before	25	40	46	56
Denied Entry After	69	116	76	124
Travel Distance (mi)	1218	1222	1271	1247
Travel Time (hr)	136.8	136.2	134.2	149.2
Total Delay (hr)	93.0	92.4	88.8	104.6
Total Stops	3482	3141	3152	3411
Fuel Used (gal)	62.5	62.7	63.0	66.0

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2202	2254	2178	2289	2175	2179	2259
Vehs Exited	2071	2131	2077	2104	2067	2068	2075
Starting Vehs	528	511	532	525	549	574	421
Ending Vehs	659	634	633	710	657	685	605
Denied Entry Before	108	110	120	171	115	226	155
Denied Entry After	289	227	223	331	361	436	294
Travel Distance (mi)	1295	1348	1349	1345	1282	1265	1352
Travel Time (hr)	196.5	185.1	187.4	216.8	211.2	240.0	190.9
Total Delay (hr)	150.3	137.0	139.2	168.8	165.5	194.7	142.7
Total Stops	4026	3987	3937	4423	3950	4122	3566
Fuel Used (gal)	77.8	76.4	77.1	83.8	80.9	87.5	77.8

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2279	2337	2232	2229
Vehs Exited	2131	2100	2087	2090
Starting Vehs	505	469	484	503
Ending Vehs	653	706	629	650
Denied Entry Before	69	116	76	124
Denied Entry After	190	217	202	275
Travel Distance (mi)	1338	1346	1355	1327
Travel Time (hr)	174.6	189.6	173.8	196.6
Total Delay (hr)	126.9	141.4	125.3	149.2
Total Stops	4018	3963	3933	3988
Fuel Used (gal)	74.1	77.5	74.0	78.7

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1855	1944	1945	1968	1924	1792	1966
Vehs Exited	1908	1995	1959	2047	1953	1914	2044
Starting Vehs	659	634	633	710	657	685	605
Ending Vehs	606	583	619	631	628	563	527
Denied Entry Before	289	227	223	331	361	436	294
Denied Entry After	472	297	326	377	507	640	339
Travel Distance (mi)	1211	1244	1213	1288	1229	1188	1311
Travel Time (hr)	246.0	211.4	221.2	256.8	270.7	281.6	214.8
Total Delay (hr)	202.8	166.8	177.8	210.7	226.8	239.0	168.1
Total Stops	3720	3396	3692	4249	4175	3356	3172
Fuel Used (gal)	87.1	80.3	81.7	91.9	93.6	95.0	82.3

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1809	1919	1870	1896
Vehs Exited	1964	2004	1966	1976
Starting Vehs	653	706	629	650
Ending Vehs	498	621	533	572
Denied Entry Before	190	217	202	275
Denied Entry After	269	286	329	381
Travel Distance (mi)	1231	1255	1249	1242
Travel Time (hr)	198.1	227.7	202.8	233.1
Total Delay (hr)	154.2	182.9	158.2	188.7
Total Stops	3630	3857	3421	3667
Fuel Used (gal)	76.7	84.7	78.4	85.2

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1806	1930	1837	1862	1821	1794	1888
Vehs Exited	1839	1983	1855	1976	1799	1806	1899
Starting Vehs	606	583	619	631	628	563	527
Ending Vehs	573	530	601	517	650	551	516
Denied Entry Before	472	297	326	377	507	640	339
Denied Entry After	644	410	524	430	710	802	430
Travel Distance (mi)	1158	1270	1182	1250	1160	1160	1219
Travel Time (hr)	284.9	231.7	252.6	239.6	312.4	322.4	220.9
Total Delay (hr)	243.5	186.2	210.5	194.9	271.1	280.8	177.6
Total Stops	3209	3697	3491	3942	4072	3220	2921
Fuel Used (gal)	94.6	85.5	87.7	87.0	101.1	103.6	81.4

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1907	1914	1865	1860
Vehs Exited	1954	2002	1884	1898
Starting Vehs	498	621	533	572
Ending Vehs	451	533	514	531
Denied Entry Before	269	286	329	381
Denied Entry After	332	399	423	508
Travel Distance (mi)	1235	1281	1221	1214
Travel Time (hr)	191.1	230.7	225.2	251.2
Total Delay (hr)	147.0	184.9	181.4	207.8
Total Stops	3150	3341	3611	3461
Fuel Used (gal)	75.3	85.2	82.5	88.4

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0
Denied Del/Veh (s)	2.9	0.5	0.5	3.6	0.2	0.2	1.4	1.5	0.2	1.9	0.6	0.6
Total Delay (hr)	1.0	1.2	0.4	0.1	0.6	0.3	4.9	19.7	0.4	1.8	10.2	3.4
Total Del/Veh (s)	31.0	29.1	27.5	36.8	24.7	22.3	131.6	99.1	99.0	95.3	83.5	82.0
Stop Delay (hr)	0.9	1.0	0.4	0.1	0.6	0.3	4.1	15.3	0.3	1.5	8.1	2.8
Stop Del/Veh (s)	27.6	24.7	25.3	33.6	21.2	20.7	111.2	77.2	77.9	81.0	66.1	66.6
Travel Dist (mi)	31.3	39.7	13.6	2.5	20.0	9.9	25.9	141.6	3.1	24.8	161.9	55.9
Travel Time (hr)	2.2	2.6	0.9	0.2	1.3	0.7	5.9	24.9	0.5	2.7	15.7	5.5
Vehicles Entered	116	148	51	11	91	45	127	698	15	66	431	149
Vehicles Exited	118	151	51	11	92	46	130	688	15	66	424	147
Hourly Exit Rate	118	151	51	11	92	46	130	688	15	66	424	147
Input Volume	117	145	49	12	91	44	150	830	18	65	432	143
% of Volume	101	104	105	90	101	105	87	83	82	102	98	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.6
Denied Del/Veh (s)	1.1
Total Delay (hr)	44.1
Total Del/Veh (s)	79.6
Stop Delay (hr)	35.4
Stop Del/Veh (s)	63.9
Travel Dist (mi)	530.4
Travel Time (hr)	63.0
Vehicles Entered	1948
Vehicles Exited	1939
Hourly Exit Rate	1939
Input Volume	2097
% of Volume	92
Denied Entry Before	0
Denied Entry After	0

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.1	0.4	0.1	0.7
Denied Del/Veh (s)	0.0		0.0	0.6	0.4	3.2	5.6	1.0
Total Delay (hr)	2.5	0.0	1.4	11.1	6.3	14.4	3.2	38.8
Total Del/Veh (s)	48.3		10.6	79.9	33.4	122.1	120.7	59.2
Stop Delay (hr)	2.2	0.0	0.7	9.9	5.2	12.4	2.8	33.2
Stop Del/Veh (s)	43.2		4.9	71.7	27.5	105.7	106.0	50.7
Travel Dist (mi)	15.1	0.0	34.7	44.5	62.1	81.0	18.5	256.0
Travel Time (hr)	3.0	0.0	2.7	13.1	8.6	17.5	4.1	49.0
Vehicles Entered	179	0	475	481	668	406	92	2301
Vehicles Exited	177	0	477	486	670	405	92	2307
Hourly Exit Rate	177	0	477	486	670	405	92	2307
Input Volume	188	0	473	582	823	413	93	2572
% of Volume	94	0	101	83	81	98	99	90
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	1	0	1

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	156.5	41.2	32.6	0.0	0.0	0.0	0.1	0.4	0.1	0.0	0.0	0.0
Denied Del/Veh (s)	1271.4	1236.4	1235.4	0.0	0.1	0.6	7.5	1.9	3.6	0.0	0.0	0.0
Total Delay (hr)	62.0	15.9	2.8	0.8	0.2	3.4	6.5	11.6	0.7	4.8	2.6	0.1
Total Del/Veh (s)	949.0	954.9	252.4	39.5	29.8	47.9	311.7	56.9	35.6	51.0	18.0	11.1
Stop Delay (hr)	62.2	16.0	2.6	0.7	0.2	3.3	6.5	10.3	0.6	4.1	1.8	0.0
Stop Del/Veh (s)	952.7	957.6	237.6	37.2	27.1	46.9	310.3	50.9	32.0	42.9	12.4	7.3
Travel Dist (mi)	52.6	13.3	11.0	4.0	1.4	14.8	4.1	43.5	4.4	30.7	48.0	1.6
Travel Time (hr)	220.2	57.6	35.8	0.9	0.3	4.1	6.8	13.4	1.0	6.2	4.5	0.1
Vehicles Entered	170	44	36	68	26	250	70	725	71	334	518	18
Vehicles Exited	175	44	37	68	26	250	68	722	71	330	519	18
Hourly Exit Rate	175	44	37	68	26	250	68	722	71	330	519	18
Input Volume	405	108	90	65	26	255	75	741	74	334	523	17
% of Volume	43	41	41	104	98	98	90	97	96	99	99	104
Denied Entry Before	39	9	8	0	0	0	0	0	0	0	0	0
Denied Entry After	273	76	59	0	0	0	0	1	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	230.9
Denied Del/Veh (s)	303.5
Total Delay (hr)	111.3
Total Del/Veh (s)	164.1
Stop Delay (hr)	108.3
Stop Del/Veh (s)	159.7
Travel Dist (mi)	229.5
Travel Time (hr)	351.0
Vehicles Entered	2330
Vehicles Exited	2328
Hourly Exit Rate	2328
Input Volume	2715
% of Volume	86
Denied Entry Before	56
Denied Entry After	409

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	9.1	0.0	24.9	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	236.6	15.0	234.8	0.1	0.1	0.1	1.1	0.7	1.0	0.0	0.0	0.0
Total Delay (hr)	12.1	0.1	25.1	0.4	0.1	0.8	0.2	3.7	0.0	0.3	0.2	0.0
Total Del/Veh (s)	364.1	339.0	278.4	126.2	121.5	121.4	23.4	17.8	23.2	34.1	1.4	0.3
Stop Delay (hr)	12.3	0.1	25.8	0.4	0.1	0.8	0.1	2.3	0.0	0.3	0.1	0.0
Stop Del/Veh (s)	369.7	345.0	285.8	124.4	117.2	121.6	15.3	10.9	15.1	32.5	0.4	0.0
Travel Dist (mi)	32.9	0.2	89.8	2.0	0.4	4.7	12.6	330.0	2.8	1.2	20.7	0.3
Travel Time (hr)	22.4	0.1	53.2	0.5	0.1	1.0	0.6	14.9	0.1	0.4	0.9	0.0
Vehicles Entered	114	1	310	11	2	25	28	734	6	35	584	9
Vehicles Exited	107	1	296	11	2	25	28	732	6	35	584	9
Hourly Exit Rate	107	1	296	11	2	25	28	732	6	35	584	9
Input Volume	135	1	378	10	2	23	29	717	8	37	642	11
% of Volume	79	100	78	110	89	110	97	102	73	94	91	84
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	25	0	71	0	0	0	0	0	0	0	0	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	All
Denied Delay (hr)	34.2
Denied Del/Veh (s)	62.9
Total Delay (hr)	43.1
Total Del/Veh (s)	82.0
Stop Delay (hr)	42.3
Stop Del/Veh (s)	80.5
Travel Dist (mi)	497.7
Travel Time (hr)	94.4
Vehicles Entered	1859
Vehicles Exited	1836
Hourly Exit Rate	1836
Input Volume	1993
% of Volume	92
Denied Entry Before	0
Denied Entry After	96

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.2	0.0	0.1	0.1	0.1
Total Delay (hr)	0.0	0.2	0.4	0.0	0.1	0.0	0.8
Total Del/Veh (s)	6.4	1.2	2.4	1.4	27.2	12.4	2.1
Stop Delay (hr)	0.0	0.0	0.2	0.0	0.1	0.0	0.3
Stop Del/Veh (s)	4.4	0.2	1.1	0.7	25.3	12.2	0.9
Travel Dist (mi)	0.4	36.5	41.1	0.4	2.3	1.0	81.6
Travel Time (hr)	0.0	1.5	1.8	0.0	0.2	0.1	3.6
Vehicles Entered	7	696	577	6	15	6	1307
Vehicles Exited	7	696	577	6	15	6	1307
Hourly Exit Rate	7	696	577	6	15	6	1307
Input Volume	7	702	672	7	16	5	1409
% of Volume	100	99	86	83	95	114	93
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0
Total Delay (hr)	0.0	0.6	0.0	0.1	6.1	0.0	0.5	0.7	0.1	0.6	8.9
Total Del/Veh (s)	23.2	3.2	2.5	38.5	34.6	29.0	240.4	127.5	72.5	117.6	22.5
Stop Delay (hr)	0.0	0.1	0.0	0.1	4.6	0.0	0.5	0.7	0.1	0.6	6.8
Stop Del/Veh (s)	19.4	0.6	0.7	31.1	26.1	23.4	238.6	127.3	70.6	117.3	17.3
Travel Dist (mi)	0.2	38.7	1.5	1.2	69.7	0.5	1.6	4.4	0.8	3.0	121.6
Travel Time (hr)	0.0	2.0	0.1	0.2	8.5	0.1	0.6	0.9	0.1	0.7	13.2
Vehicles Entered	3	689	27	11	631	4	8	20	4	17	1414
Vehicles Exited	3	689	27	11	627	5	8	21	4	18	1413
Hourly Exit Rate	3	689	27	11	627	5	8	21	4	18	1413
Input Volume	4	693	26	14	717	5	8	21	5	18	1511
% of Volume	75	99	103	77	87	100	100	101	84	99	94
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.4	0.0	0.0	0.0	0.2	0.1	0.0	3.2	0.3	0.4
Total Delay (hr)	1.9	9.3	1.0	0.3	5.3	0.3	3.9	3.3	0.8	0.9	2.5	0.4
Total Del/Veh (s)	90.1	53.0	47.9	66.0	31.6	27.2	71.6	72.7	74.9	61.0	63.8	59.7
Stop Delay (hr)	1.7	7.5	0.8	0.3	4.2	0.3	3.6	3.0	0.8	0.9	2.3	0.4
Stop Del/Veh (s)	80.8	42.5	39.3	60.7	25.3	23.0	65.2	65.7	69.8	57.1	58.3	56.6
Travel Dist (mi)	6.1	50.4	5.9	0.9	32.7	2.3	28.8	23.5	5.8	15.2	38.5	6.8
Travel Time (hr)	2.2	11.0	1.2	0.4	6.4	0.4	5.0	4.1	1.1	1.5	3.8	0.7
Vehicles Entered	75	619	72	17	595	41	197	162	40	53	135	24
Vehicles Exited	75	618	72	17	596	41	196	163	40	53	134	24
Hourly Exit Rate	75	618	72	17	596	41	196	163	40	53	134	24
Input Volume	80	622	68	24	670	50	203	157	39	54	139	24
% of Volume	94	99	106	72	89	82	97	104	103	98	97	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.2
Total Delay (hr)	30.1
Total Del/Veh (s)	52.4
Stop Delay (hr)	25.7
Stop Del/Veh (s)	44.7
Travel Dist (mi)	216.8
Travel Time (hr)	37.8
Vehicles Entered	2030
Vehicles Exited	2029
Hourly Exit Rate	2029
Input Volume	2128
% of Volume	95
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.1	0.4	3.5	0.0	0.0	0.0	0.4
Total Delay (hr)	0.1	0.3	0.3	0.0	0.2	0.0	0.1	1.1
Total Del/Veh (s)	4.9	3.0	3.7	0.7	15.8	1.0	13.2	4.2
Stop Delay (hr)	0.0	0.1	0.2	0.0	0.2	0.0	0.1	0.6
Stop Del/Veh (s)	2.2	0.6	2.7	0.1	14.8	0.1	13.4	2.6
Travel Dist (mi)	3.2	24.7	32.0	5.9	0.8	0.0	0.8	67.4
Travel Time (hr)	0.2	1.4	1.4	0.3	0.2	0.0	0.2	3.8
Vehicles Entered	53	409	300	56	41	1	39	899
Vehicles Exited	54	413	301	56	41	1	40	906
Hourly Exit Rate	54	413	301	56	41	1	40	906
Input Volume	62	472	304	54	43	2	39	976
% of Volume	87	87	99	104	95	67	103	93
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	4.6	0.3	4.9
Total Del/Veh (s)	15.6	1.6	9.6
Stop Delay (hr)	3.7	0.2	3.9
Stop Del/Veh (s)	12.4	1.1	7.6
Travel Dist (mi)	81.2	13.3	94.5
Travel Time (hr)	8.4	0.9	9.3
Vehicles Entered	1056	789	1845
Vehicles Exited	1054	788	1842
Hourly Exit Rate	1054	788	1842
Input Volume	1049	868	1917
% of Volume	100	91	96
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.0	0.0	0.2	1.2	0.6	0.1	0.1	0.0
Denied Del/Veh (s)	1.4	2.5	4.2	0.0	0.0	0.0	5.1	3.0	3.6	2.5	0.3	0.5
Total Delay (hr)	1.0	7.2	1.7	8.1	4.1	0.6	3.9	21.1	4.6	4.0	10.4	0.4
Total Del/Veh (s)	78.1	84.5	74.0	61.1	60.5	26.4	106.6	53.3	27.5	88.1	35.0	30.4
Stop Delay (hr)	1.0	6.5	1.6	7.6	3.8	0.5	3.5	16.3	3.7	3.7	8.2	0.3
Stop Del/Veh (s)	71.7	76.6	68.2	56.7	54.9	24.0	95.8	41.3	22.3	80.9	27.4	25.7
Travel Dist (mi)	4.7	30.1	8.4	35.0	17.9	5.8	19.4	208.6	88.7	19.3	124.8	5.3
Travel Time (hr)	1.2	8.4	2.2	9.6	4.8	0.8	4.8	29.3	8.6	4.9	14.7	0.6
Vehicles Entered	48	302	84	471	241	78	128	1381	590	163	1042	44
Vehicles Exited	48	302	84	470	240	78	129	1387	591	163	1046	44
Hourly Exit Rate	48	302	84	470	240	78	129	1387	591	163	1046	44
Input Volume	48	290	86	522	260	86	132	1394	590	169	1021	44
% of Volume	99	104	97	90	92	90	98	99	100	96	102	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	2	0	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	2.5
Denied Del/Veh (s)	1.9
Total Delay (hr)	67.3
Total Del/Veh (s)	51.7
Stop Delay (hr)	56.7
Stop Del/Veh (s)	43.6
Travel Dist (mi)	568.1
Travel Time (hr)	89.9
Vehicles Entered	4572
Vehicles Exited	4582
Hourly Exit Rate	4582
Input Volume	4643
% of Volume	99
Denied Entry Before	0
Denied Entry After	2

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.1
Total Delay (hr)	0.1	0.3	0.4
Total Del/Veh (s)	3.4	13.6	7.7
Stop Delay (hr)	0.1	0.3	0.4
Stop Del/Veh (s)	2.4	12.6	6.7
Travel Dist (mi)	2.4	13.5	15.9
Travel Time (hr)	0.3	0.8	1.0
Vehicles Entered	113	81	194
Vehicles Exited	114	81	195
Hourly Exit Rate	114	81	195
Input Volume	120	82	202
% of Volume	95	98	97
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Delay (hr)	0.4	0.0	0.0	0.6	1.4	0.0	2.5
Total Del/Veh (s)	2.1	1.4	12.8	3.8	71.8	9.6	6.5
Stop Delay (hr)	0.0	0.0	0.0	0.4	1.4	0.0	1.8
Stop Del/Veh (s)	0.0	0.0	10.4	2.3	69.9	9.4	4.7
Travel Dist (mi)	73.8	3.4	0.3	29.3	6.0	1.5	114.1
Travel Time (hr)	2.9	0.1	0.0	1.6	1.6	0.1	6.4
Vehicles Entered	683	31	5	580	69	18	1386
Vehicles Exited	683	31	5	580	70	18	1387
Hourly Exit Rate	683	31	5	580	70	18	1387
Input Volume	688	29	5	672	67	18	1479
% of Volume	99	107	100	86	104	101	94
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.5	0.0	0.3	0.1	0.9
Total Del/Veh (s)	2.7	1.4	1.7	11.4	2.3
Stop Delay (hr)	0.1	0.0	0.0	0.1	0.1
Stop Del/Veh (s)	0.3	0.1	0.2	11.1	0.4
Travel Dist (mi)	45.3	4.9	49.8	1.5	101.4
Travel Time (hr)	2.0	0.2	2.4	0.1	4.7
Vehicles Entered	640	68	584	19	1311
Vehicles Exited	642	69	582	19	1312
Hourly Exit Rate	642	69	582	19	1312
Input Volume	650	67	681	20	1418
% of Volume	99	103	85	96	93
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.3	0.1	0.0
Total Delay (hr)	0.5	0.1	1.3	0.1	0.5	0.1	2.7
Total Del/Veh (s)	2.7	1.1	6.3	4.3	16.7	20.0	4.8
Stop Delay (hr)	0.2	0.0	0.9	0.0	0.5	0.1	1.8
Stop Del/Veh (s)	1.3	0.2	4.0	2.9	16.5	19.7	3.2
Travel Dist (mi)	11.1	6.5	48.8	3.4	4.0	1.2	74.9
Travel Time (hr)	0.9	0.6	3.3	0.2	0.7	0.2	6.0
Vehicles Entered	661	393	767	54	106	26	2007
Vehicles Exited	661	393	767	54	106	26	2007
Hourly Exit Rate	661	393	767	54	106	26	2007
Input Volume	661	389	848	54	108	25	2084
% of Volume	100	101	90	100	98	105	96
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.1	0.3
Total Del/Veh (s)	8.1	3.6	0.5	0.2	5.4	2.3	1.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	7.0	3.6	0.0	0.0	1.9	0.2	0.3
Travel Dist (mi)	0.2	0.4	24.9	2.1	2.4	30.7	60.7
Travel Time (hr)	0.0	0.0	0.9	0.1	0.1	1.2	2.4
Vehicles Entered	11	20	371	32	16	210	660
Vehicles Exited	11	20	372	32	16	210	661
Hourly Exit Rate	11	20	372	32	16	210	661
Input Volume	13	19	373	36	16	217	674
% of Volume	83	107	100	89	98	97	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.2	0.0	0.0	0.2
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	5.9	3.5	0.4	0.0	2.8	0.4	0.5
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	5.2	3.6	0.0	0.0	0.6	0.0	0.0
Travel Dist (mi)	0.0	0.0	10.8	0.1	0.1	14.6	25.7
Travel Time (hr)	0.0	0.0	0.4	0.0	0.0	0.5	1.0
Vehicles Entered	2	3	400	4	1	218	628
Vehicles Exited	2	3	400	4	1	218	628
Hourly Exit Rate	2	3	400	4	1	218	628
Input Volume	2	2	407	2	2	226	640
% of Volume	100	150	98	200	50	97	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	269.1
Denied Del/Veh (s)	114.9
Total Delay (hr)	381.2
Total Del/Veh (s)	162.5
Stop Delay (hr)	332.5
Stop Del/Veh (s)	141.7
Travel Dist (mi)	5030.0
Travel Time (hr)	830.1
Vehicles Entered	7924
Vehicles Exited	7914
Hourly Exit Rate	7914
Input Volume	41421
% of Volume	19
Denied Entry Before	56
Denied Entry After	508

Arterial Level of Service: NB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Seminary Dr	4	17.8	72.0	0.5	23
	46	6.1	10.6	0.0	12
	20	38.8	48.7	0.1	6
Ringwood Ave	3	56.9	66.0	0.1	3
Ravenswood Ave	2	38.1	49.5	0.1	7
	1	100.7	126.1	0.2	6
Total		258.3	372.9	0.9	9

Arterial Level of Service: SB Middlefield Road

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Ravenswood Ave	2	120.7	147.2	0.2	5
	3	5.0	16.0	0.1	21
	20	2.8	10.4	0.1	21
	46	2.1	12.0	0.1	25
	4	1.4	5.8	0.0	23
Total		132.0	191.4	0.5	9

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	172	216	61	184	150	1027	160	1019
Average Queue (ft)	69	108	11	74	109	871	72	576
95th Queue (ft)	134	185	44	145	179	1273	162	1088
Link Distance (ft)		1416		1162		1023		1985
Upstream Blk Time (%)						8		
Queuing Penalty (veh)						79		
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	0	0	1	23	10	49	1	49
Queuing Penalty (veh)	0	0	1	3	86	74	5	32

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	390	170	449	448	793
Average Queue (ft)	193	114	409	307	555
95th Queue (ft)	367	238	501	532	894
Link Distance (ft)	385		424	424	1023
Upstream Blk Time (%)	1		22	7	0
Queuing Penalty (veh)	5		155	48	1
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	39	1			
Queuing Penalty (veh)	184	2			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	B46	SB
Directions Served	LT	R	LT	R	L	T	T	R	T	T	T	L
Maximum Queue (ft)	1635	1635	135	265	200	340	352	150	416	451	174	175
Average Queue (ft)	1614	1612	60	147	145	278	296	62	192	233	62	162
95th Queue (ft)	1627	1635	116	273	250	389	397	176	477	536	213	198
Link Distance (ft)	1600	1600	256	256		253	253		379	379	134	
Upstream Blk Time (%)	100	84		6		40	43		6	16	12	
Queuing Penalty (veh)	0	0		11		176	189		27	71	106	
Storage Bay Dist (ft)					175			100				125
Storage Blk Time (%)					44	10	57	0				28
Queuing Penalty (veh)					158	7	42	0				73

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	401	482
Average Queue (ft)	223	124
95th Queue (ft)	406	355
Link Distance (ft)	424	424
Upstream Blk Time (%)	0	1
Queuing Penalty (veh)	1	3
Storage Bay Dist (ft)		
Storage Blk Time (%)	2	
Queuing Penalty (veh)	7	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	EB	WB	NB	NB	NB	SB	SB	B46	B20	B20
Directions Served	LT	R	LTR	L	T	R	L	TR	T	T	
Maximum Queue (ft)	1576	115	132	57	500	56	65	100	133	86	46
Average Queue (ft)	956	96	44	14	131	3	22	11	9	3	2
95th Queue (ft)	1931	163	141	44	606	32	62	78	113	40	26
Link Distance (ft)	1581		990		2362			134	379	253	253
Upstream Blk Time (%)	29							2	1	0	
Queuing Penalty (veh)	0							10	4	1	
Storage Bay Dist (ft)		90		50		85	80				
Storage Blk Time (%)	55	39		0	10		4	0			
Queuing Penalty (veh)	212	53		1	4		29	0			

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	112	119	46
Average Queue (ft)	11	14	18
95th Queue (ft)	73	103	45
Link Distance (ft)	213	323	834
Upstream Blk Time (%)	0	0	
Queuing Penalty (veh)	1	2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	171	524	164	92
Average Queue (ft)	15	334	47	29
95th Queue (ft)	104	573	146	85
Link Distance (ft)	232	520	1123	917
Upstream Blk Time (%)	1	4		
Queuing Penalty (veh)	6	33		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	109	474	332	317	83	251	120	567	134	344
Average Queue (ft)	67	424	196	145	19	229	101	290	61	159
95th Queue (ft)	120	527	386	348	58	297	145	491	137	280
Link Distance (ft)		343	249	249		232		723		1507
Upstream Blk Time (%)		41	23	11		35				
Queuing Penalty (veh)		316	88	41		258				
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	9	50			1	49	32	40	1	25
Queuing Penalty (veh)	64	40			5	12	61	82	2	14

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	211	136	67	70
Average Queue (ft)	36	18	4	36
95th Queue (ft)	126	98	41	63
Link Distance (ft)	256	561		65
Upstream Blk Time (%)	0			5
Queuing Penalty (veh)	0			4
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		2		
Queuing Penalty (veh)		1		

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	318	338	42	45
Average Queue (ft)	125	148	12	11
95th Queue (ft)	318	367	37	36
Link Distance (ft)	318	318	25	25
Upstream Blk Time (%)	0	3	13	10
Queuing Penalty (veh)	2	14	55	45
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	470	250	300	335	326	160	345	802	777	675	265	598
Average Queue (ft)	264	195	187	210	202	67	224	565	518	267	195	375
95th Queue (ft)	460	285	302	325	338	178	416	835	792	602	314	555
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	2		0	1	3			4	2	2		0
Queuing Penalty (veh)	0		0	6	13			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	17	8	1	4	27	0	1	32			4	21
Queuing Penalty (veh)	40	15	2	10	23	0	4	43			22	36

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	495
Average Queue (ft)	321
95th Queue (ft)	470
Link Distance (ft)	621
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	62	76
Average Queue (ft)	35	10
95th Queue (ft)	52	81
Link Distance (ft)	65	887
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (ft)	21	195	180	43
Average Queue (ft)	1	38	65	13
95th Queue (ft)	18	156	186	39
Link Distance (ft)	520	213	455	455
Upstream Blk Time (%)		2	0	
Queuing Penalty (veh)		12	0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 36: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	T	R
Maximum Queue (ft)	134	18	42
Average Queue (ft)	9	2	15
95th Queue (ft)	69	33	41
Link Distance (ft)	323	385	427
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	B27	NB	SB
Directions Served	T	TR	TR	T	R	R
Maximum Queue (ft)	80	66	297	56	110	66
Average Queue (ft)	17	11	84	3	44	19
95th Queue (ft)	55	46	246	37	99	49
Link Distance (ft)	25	25	249	343	193	234
Upstream Blk Time (%)	16	6	2		1	
Queuing Penalty (veh)	85	29	19		0	
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 42: Laurel St

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	46	2	77
Average Queue (ft)	20	0	9
95th Queue (ft)	45	2	43
Link Distance (ft)	95	297	723
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Laurel St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	29	6
Average Queue (ft)	4	0
95th Queue (ft)	21	3
Link Distance (ft)	85	297
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 3366

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	6.5	54.3	52.4	7.5	53.3	52.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	None	Max	None
Avg. Green (s)	6.2	4.7	8.6	7.2	0.0	8.6	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	38	0	0	7	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	31	100	100	70	100	100	0
Cycles with Peds (%)	0	38	96	0	17	14	0

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	2	3	5	6	7	8
Movement(s) Served	NBT	EBR	NBL	SBT	EBL	NBTL
Maximum Green (s)	48.3	72.7	5.0	38.8	34.5	33.7
Minimum Green (s)	10.0	8.0	5.0	7.0	7.0	7.0
Recall	C-Max	Min	None	C-Max	Ped	None
Avg. Green (s)	-2.1	-2.9	5.0	-11.6	6.2	-10.1
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	100	0	0	0
Cycles Maxed Out (%)	100	100	100	100	54	100
Cycles with Peds (%)	92	0	0	8	100	29

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	5.3	79.3	41.4	8.5	76.1	35.4
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Min	C-Max	None	Min	Max
Avg. Green (s)	5.6	-12.7	10.7	7.2	13.9	2.6
g/C Ratio	0.07	-0.79	0.66	0.32	0.86	0.16
Cycles Skipped (%)	81	0	0	28	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	19	85	100	17	85	100
Cycles with Peds (%)	0	60	55	0	45	45

Controller Summary
Average Cycle Length (s): 16.2
Number of Complete Cycles : 16

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	None	None	None	C-Max
Avg. Green (s)	-10.8	0.4	-5.1	-0.1	-11.4	6.1
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	12	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	100	67	83	19	100
Cycles with Peds (%)	0	50	0	71	0	27

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	7439	7585	7121	7576	7514	7489	7632
Vehs Exited	7421	7451	7005	7367	7383	7319	7532
Starting Vehs	500	443	493	420	399	429	459
Ending Vehs	518	577	609	629	530	599	559
Denied Entry Before	113	112	317	287	162	193	219
Denied Entry After	1156	1037	1738	1167	1138	1173	1172
Travel Distance (mi)	4786	4846	4571	4687	4786	4778	4854
Travel Time (hr)	1153.2	1203.1	1633.4	1306.6	1254.1	1286.8	1329.9
Total Delay (hr)	981.1	1028.5	1468.7	1138.2	1082.3	1114.5	1155.2
Total Stops	14293	16420	15262	14975	15352	16149	15498
Fuel Used (gal)	386.1	398.1	490.3	418.0	408.5	415.7	428.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:00	8:00	8:00	8:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	7366	7430	7541	7463
Vehs Exited	7412	7333	7569	7378
Starting Vehs	443	501	499	460
Ending Vehs	397	598	471	540
Denied Entry Before	128	192	101	180
Denied Entry After	1212	1260	936	1198
Travel Distance (mi)	4812	4750	4898	4777
Travel Time (hr)	1153.2	1390.1	999.0	1270.9
Total Delay (hr)	979.8	1219.2	822.5	1099.0
Total Stops	14091	16914	14672	15362
Fuel Used (gal)	386.8	439.8	354.4	412.6

Interval #0 Information Seeding

Start Time	6:30
End Time	7:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1740	1827	1616	1701	1773	1764	1762
Vehs Exited	1803	1772	1699	1735	1693	1731	1770
Starting Vehs	500	443	493	420	399	429	459
Ending Vehs	437	498	410	386	479	462	451
Denied Entry Before	113	112	317	287	162	193	219
Denied Entry After	298	312	644	507	361	395	499
Travel Distance (mi)	1151	1189	1129	1085	1128	1160	1159
Travel Time (hr)	166.3	175.3	226.3	194.4	170.8	178.0	195.1
Total Delay (hr)	125.0	132.4	185.7	155.4	130.2	136.3	153.6
Total Stops	3189	3556	3059	2837	3092	3138	3089
Fuel Used (gal)	67.7	70.1	80.7	72.3	67.5	70.1	74.5

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1742	1785	1808	1747
Vehs Exited	1738	1756	1846	1754
Starting Vehs	443	501	499	460
Ending Vehs	447	530	461	452
Denied Entry Before	128	192	101	180
Denied Entry After	291	419	214	393
Travel Distance (mi)	1153	1179	1181	1151
Travel Time (hr)	170.4	191.7	151.6	182.0
Total Delay (hr)	128.8	149.5	109.1	140.6
Total Stops	3021	3699	3482	3215
Fuel Used (gal)	68.6	73.9	64.9	71.0

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2246	2219	2074	2194	2166	2212	2264
Vehs Exited	2050	1937	1728	1919	1942	1925	2055
Starting Vehs	437	498	410	386	479	462	451
Ending Vehs	633	780	756	661	703	749	660
Denied Entry Before	298	312	644	507	361	395	499
Denied Entry After	644	695	1123	826	813	766	869
Travel Distance (mi)	1327	1261	1109	1274	1277	1259	1306
Travel Time (hr)	255.2	278.8	362.3	300.6	298.1	297.6	314.8
Total Delay (hr)	207.4	233.2	322.1	254.7	252.1	252.2	267.6
Total Stops	4020	4483	3839	4053	4287	4207	4351
Fuel Used (gal)	91.9	95.6	110.5	100.4	100.3	99.7	105.2

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2155	2142	2230	2184
Vehs Exited	2022	1886	2048	1948
Starting Vehs	447	530	461	452
Ending Vehs	580	786	643	688
Denied Entry Before	291	419	214	393
Denied Entry After	737	785	511	776
Travel Distance (mi)	1325	1228	1351	1272
Travel Time (hr)	263.0	311.8	231.7	291.4
Total Delay (hr)	215.2	267.4	183.0	245.5
Total Stops	4051	4728	4182	4221
Fuel Used (gal)	93.4	102.7	87.4	98.7

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1610	1715	1636	1828	1726	1746	1700
Vehs Exited	1729	1924	1793	1921	1846	1903	1775
Starting Vehs	633	780	756	661	703	749	660
Ending Vehs	514	571	599	568	583	592	585
Denied Entry Before	644	695	1123	826	813	766	869
Denied Entry After	1009	895	1505	1016	1016	1000	1093
Travel Distance (mi)	1101	1204	1178	1165	1174	1188	1148
Travel Time (hr)	339.8	367.6	491.8	370.5	379.9	388.3	398.9
Total Delay (hr)	300.2	324.3	449.4	328.8	338.0	345.2	357.5
Total Stops	3411	4302	4334	3982	4187	4428	4052
Fuel Used (gal)	106.1	115.1	143.1	114.8	117.0	119.3	120.6

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1742	1688	1702	1707
Vehs Exited	1852	1813	1891	1844
Starting Vehs	580	786	643	688
Ending Vehs	470	661	454	556
Denied Entry Before	737	785	511	776
Denied Entry After	979	1123	756	1034
Travel Distance (mi)	1195	1137	1179	1167
Travel Time (hr)	341.9	428.6	290.3	379.8
Total Delay (hr)	299.0	387.6	247.9	337.8
Total Stops	3983	4254	3699	4058
Fuel Used (gal)	109.1	127.5	97.1	117.0

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1843	1824	1795	1853	1849	1767	1906
Vehs Exited	1839	1818	1785	1792	1902	1760	1932
Starting Vehs	514	571	599	568	583	592	585
Ending Vehs	518	577	609	629	530	599	559
Denied Entry Before	1009	895	1505	1016	1016	1000	1093
Denied Entry After	1156	1037	1738	1167	1138	1173	1172
Travel Distance (mi)	1208	1191	1155	1163	1207	1171	1240
Travel Time (hr)	392.0	381.4	553.1	441.1	405.3	422.9	421.1
Total Delay (hr)	348.5	338.6	511.5	399.4	362.0	380.7	376.6
Total Stops	3673	4079	4030	4103	3786	4376	4006
Fuel Used (gal)	120.4	117.4	156.1	130.5	123.7	126.6	128.0

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1727	1815	1801	1817
Vehs Exited	1800	1878	1784	1828
Starting Vehs	470	661	454	556
Ending Vehs	397	598	471	540
Denied Entry Before	979	1123	756	1034
Denied Entry After	1212	1260	936	1198
Travel Distance (mi)	1139	1206	1187	1187
Travel Time (hr)	377.9	458.0	325.3	417.8
Total Delay (hr)	336.8	414.7	282.4	375.1
Total Stops	3036	4233	3309	3860
Fuel Used (gal)	115.7	135.8	105.0	125.9

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.1	0.6	0.3	0.0	0.0	0.0	1.6	4.8	1.1
Denied Del/Veh (s)	2.9	0.5	0.7	9.1	10.0	7.3	0.1	0.0	0.0	38.0	35.9	34.9
Total Delay (hr)	2.3	4.0	1.3	1.5	4.6	3.0	1.6	3.7	0.4	7.8	23.5	5.4
Total Del/Veh (s)	103.7	68.1	67.9	138.1	79.7	78.7	49.3	31.1	29.3	178.8	172.9	165.2
Stop Delay (hr)	2.2	3.5	1.2	1.4	4.1	2.7	1.4	2.8	0.3	6.9	20.5	4.8
Stop Del/Veh (s)	98.4	60.8	63.0	130.4	70.2	71.8	42.0	23.3	22.9	157.9	150.9	146.7
Travel Dist (mi)	21.2	55.3	18.7	8.7	47.9	30.8	23.3	84.4	8.7	56.7	174.3	41.0
Travel Time (hr)	3.1	5.8	2.0	1.9	6.8	4.4	2.4	6.6	0.7	11.4	34.1	7.9
Vehicles Entered	80	207	70	38	209	135	116	425	43	153	474	112
Vehicles Exited	76	204	70	36	206	132	114	426	44	147	456	108
Hourly Exit Rate	76	204	70	36	206	132	114	426	44	147	456	108
Input Volume	81	209	63	39	205	133	113	444	47	156	472	111
% of Volume	94	98	112	92	100	99	101	96	94	94	97	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	3	6	2

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	8.6
Denied Del/Veh (s)	14.9
Total Delay (hr)	59.0
Total Del/Veh (s)	101.3
Stop Delay (hr)	51.7
Stop Del/Veh (s)	88.8
Travel Dist (mi)	571.1
Travel Time (hr)	87.3
Vehicles Entered	2062
Vehicles Exited	2019
Hourly Exit Rate	2019
Input Volume	2072
% of Volume	97
Denied Entry Before	0
Denied Entry After	11

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	2.7	0.0	1.8	0.4	0.1	0.2	0.0	0.6
Total Delay (hr)	2.3	0.0	1.8	6.7	0.5	16.0	3.5	30.8
Total Del/Veh (s)	79.3	2.9	19.8	58.7	3.4	123.5	120.5	57.5
Stop Delay (hr)	2.2	0.0	1.4	6.2	0.2	13.7	3.1	26.7
Stop Del/Veh (s)	74.6	0.9	15.4	54.2	1.3	105.9	105.4	49.9
Travel Dist (mi)	8.3	0.9	22.8	36.6	44.6	93.4	21.2	227.7
Travel Time (hr)	2.7	0.0	2.8	8.5	2.1	19.3	4.4	39.7
Vehicles Entered	102	18	322	403	496	458	104	1903
Vehicles Exited	102	18	322	404	496	449	101	1892
Hourly Exit Rate	102	18	322	404	496	449	101	1892
Input Volume	120	19	388	408	496	470	104	2006
% of Volume	85	96	83	99	100	95	97	94
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0
Denied Del/Veh (s)	0.2	0.2	0.1	0.8	0.8	0.2	0.5	0.7	0.6	1.2	0.4	0.6
Total Delay (hr)	1.2	0.3	0.0	2.2	1.9	1.3	6.9	14.8	1.8	5.9	10.8	1.0
Total Del/Veh (s)	67.5	73.5	4.2	54.9	43.9	15.2	89.4	98.7	61.3	102.6	75.3	47.9
Stop Delay (hr)	1.2	0.3	0.0	2.0	1.8	1.2	6.5	13.7	1.7	5.5	9.6	0.9
Stop Del/Veh (s)	63.7	68.6	3.7	51.4	40.0	14.8	84.1	91.8	56.9	95.3	66.7	42.6
Travel Dist (mi)	19.1	4.6	4.6	7.8	7.9	16.7	16.2	31.7	6.5	18.4	46.0	7.1
Travel Time (hr)	1.9	0.5	0.2	2.5	2.3	2.2	7.6	15.9	2.2	6.7	12.7	1.4
Vehicles Entered	64	15	15	136	154	296	270	526	104	203	512	77
Vehicles Exited	65	15	16	138	154	296	272	526	105	204	515	78
Hourly Exit Rate	65	15	16	138	154	296	272	526	105	204	515	78
Input Volume	62	16	14	136	158	289	279	538	105	222	566	91
% of Volume	105	95	116	101	98	102	97	98	100	92	91	86
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.6
Total Delay (hr)	48.1
Total Del/Veh (s)	71.6
Stop Delay (hr)	44.3
Stop Del/Veh (s)	66.0
Travel Dist (mi)	186.5
Travel Time (hr)	56.0
Vehicles Entered	2372
Vehicles Exited	2384
Hourly Exit Rate	2384
Input Volume	2475
% of Volume	96
Denied Entry Before	0
Denied Entry After	0

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	1.2	4.0	0.0	0.0	0.0	0.0	5.3
Denied Del/Veh (s)	0.2	2.9	0.1	0.1	15.2	16.6	16.3	0.0	0.0	0.3	9.9
Total Delay (hr)	1.2	1.3	0.1	0.5	8.9	18.6	0.1	0.4	2.8	0.2	34.1
Total Del/Veh (s)	237.6	74.2	71.1	49.9	111.6	76.5	64.0	81.2	17.2	14.4	63.2
Stop Delay (hr)	1.2	1.2	0.1	0.5	6.9	12.0	0.1	0.4	2.1	0.2	24.8
Stop Del/Veh (s)	234.6	72.1	68.8	49.2	86.0	49.6	42.0	78.2	13.3	12.4	45.9
Travel Dist (mi)	5.1	17.7	1.3	7.0	124.0	383.4	2.6	0.6	20.2	2.0	563.9
Travel Time (hr)	1.4	2.0	0.2	0.8	14.4	35.5	0.2	0.5	3.4	0.3	58.6
Vehicles Entered	17	61	7	37	278	858	6	18	574	57	1913
Vehicles Exited	18	61	7	37	275	841	6	18	573	57	1893
Hourly Exit Rate	18	61	7	37	275	841	6	18	573	57	1893
Input Volume	20	61	7	33	279	857	6	21	614	62	1960
% of Volume	91	100	100	113	99	98	96	86	93	92	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	2	8	0	0	0	0	10

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.5	0.0	0.0	0.1	0.1	0.3
Total Delay (hr)	0.0	0.2	0.1	0.0	0.1	0.1	0.5
Total Del/Veh (s)	3.3	0.9	0.9	0.4	17.3	12.4	1.4
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.1	0.3
Stop Del/Veh (s)	1.9	0.4	0.0	0.0	15.3	12.0	0.7
Travel Dist (mi)	0.1	17.5	36.2	0.2	3.5	3.3	60.8
Travel Time (hr)	0.0	0.9	1.4	0.0	0.2	0.2	2.7
Vehicles Entered	4	716	508	3	22	21	1274
Vehicles Exited	4	715	507	3	22	21	1272
Hourly Exit Rate	4	715	507	3	22	21	1272
Input Volume	5	872	514	3	26	22	1442
% of Volume	76	82	99	100	85	94	88
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.1	0.0	0.1	0.2	0.1	0.2	0.0
Total Delay (hr)	0.0	0.5	0.0	0.0	1.5	0.0	0.1	0.2	0.1	0.3	2.8
Total Del/Veh (s)	9.5	2.4	1.5	14.2	10.4	11.9	26.2	15.5	39.6	39.9	7.1
Stop Delay (hr)	0.0	0.0	0.0	0.0	1.0	0.0	0.1	0.2	0.1	0.3	1.7
Stop Del/Veh (s)	5.4	0.2	0.1	10.2	6.8	8.5	24.2	14.8	37.5	39.5	4.5
Travel Dist (mi)	0.1	42.9	0.5	0.7	55.7	0.1	3.2	9.9	1.4	5.3	119.7
Travel Time (hr)	0.0	2.1	0.0	0.0	3.4	0.0	0.2	0.6	0.1	0.5	7.0
Vehicles Entered	2	760	8	6	518	1	14	44	8	29	1390
Vehicles Exited	2	760	8	6	519	1	14	44	8	29	1391
Hourly Exit Rate	2	760	8	6	519	1	14	44	8	29	1391
Input Volume	3	950	11	6	527	1	15	40	10	27	1590
% of Volume	62	80	74	96	99	100	93	111	78	108	87
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	1.6	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	5.1	9.4	8.3	0.7	0.5	1.1	0.7	0.3	0.3	2.7	0.5	0.5
Total Delay (hr)	0.2	7.3	0.6	0.2	3.9	0.1	2.6	1.7	0.3	1.8	1.7	0.7
Total Del/Veh (s)	55.5	42.2	37.8	42.9	26.5	23.7	53.4	39.5	50.1	40.7	43.7	43.5
Stop Delay (hr)	0.2	5.7	0.5	0.2	3.1	0.1	2.4	1.5	0.3	1.6	1.4	0.6
Stop Del/Veh (s)	47.2	33.3	31.4	38.3	21.2	20.5	49.3	34.7	46.4	36.1	37.8	39.9
Travel Dist (mi)	1.2	47.4	4.3	0.8	27.9	1.2	24.6	20.0	3.0	42.5	37.8	15.2
Travel Time (hr)	0.3	10.4	0.9	0.2	4.9	0.2	3.6	2.4	0.4	3.4	3.0	1.2
Vehicles Entered	16	605	54	16	521	22	175	152	22	151	134	54
Vehicles Exited	16	612	54	16	522	22	173	152	22	150	135	54
Hourly Exit Rate	16	612	54	16	522	22	173	152	22	150	135	54
Input Volume	21	820	71	17	524	21	182	152	22	150	142	55
% of Volume	77	75	76	94	100	104	95	100	101	100	95	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	2.0
Denied Del/Veh (s)	3.7
Total Delay (hr)	21.0
Total Del/Veh (s)	38.7
Stop Delay (hr)	17.6
Stop Del/Veh (s)	32.4
Travel Dist (mi)	225.9
Travel Time (hr)	31.0
Vehicles Entered	1922
Vehicles Exited	1928
Hourly Exit Rate	1928
Input Volume	2177
% of Volume	89
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.3	0.2	0.2	0.4	0.5	0.0	1.5	3.1
Denied Del/Veh (s)	6.3	5.6	1.4	3.3	30.4	0.0	35.5	8.1
Total Delay (hr)	2.3	1.4	0.4	0.4	0.6	0.0	0.7	5.8
Total Del/Veh (s)	43.8	34.2	4.0	3.3	31.6	3.6	15.6	15.1
Stop Delay (hr)	2.2	1.3	0.1	0.1	0.6	0.0	0.7	5.1
Stop Del/Veh (s)	42.0	31.4	1.3	1.2	31.3	2.5	16.5	13.2
Travel Dist (mi)	11.0	8.8	45.2	44.6	1.2	0.4	2.7	113.9
Travel Time (hr)	3.2	2.1	2.1	2.5	1.2	0.0	2.3	13.4
Vehicles Entered	185	150	399	393	64	31	150	1372
Vehicles Exited	185	150	399	394	64	30	151	1373
Hourly Exit Rate	185	150	399	394	64	30	151	1373
Input Volume	192	160	398	400	63	26	148	1387
% of Volume	96	93	100	99	102	118	102	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	17.1	1.0	18.1
Total Del/Veh (s)	70.7	4.7	39.9
Stop Delay (hr)	16.9	0.9	17.8
Stop Del/Veh (s)	70.0	4.1	39.2
Travel Dist (mi)	64.7	14.6	79.3
Travel Time (hr)	20.1	1.6	21.7
Vehicles Entered	850	760	1610
Vehicles Exited	850	759	1609
Hourly Exit Rate	850	759	1609
Input Volume	1171	772	1943
% of Volume	73	98	83
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	12.1	66.0	14.0	0.0	0.0	0.0	9.1	72.6	50.0	92.1	370.6	6.2
Denied Del/Veh (s)	671.9	685.1	691.4	0.0	0.0	0.0	300.0	301.7	305.6	1228.1	1236.3	1246.3
Total Delay (hr)	3.7	21.2	3.9	9.2	4.0	0.3	2.2	16.2	33.0	26.8	4.0	0.0
Total Del/Veh (s)	284.8	294.4	267.9	67.3	65.4	18.6	86.8	77.0	224.7	688.2	30.2	18.0
Stop Delay (hr)	3.6	20.4	3.7	8.6	3.7	0.3	2.0	14.0	33.5	26.8	3.2	0.0
Stop Del/Veh (s)	276.2	284.0	259.2	62.4	60.1	16.3	76.9	66.3	227.8	690.4	24.3	13.8
Travel Dist (mi)	4.3	24.2	4.9	35.7	16.0	4.6	13.7	109.2	74.0	13.9	55.0	1.0
Travel Time (hr)	16.0	88.0	18.1	10.7	4.6	0.5	11.8	92.5	85.9	119.4	376.4	6.3
Vehicles Entered	43	243	48	481	215	62	91	730	499	117	460	8
Vehicles Exited	43	242	49	482	216	62	90	724	490	118	460	8
Hourly Exit Rate	43	242	49	482	216	62	90	724	490	118	460	8
Input Volume	64	326	70	489	221	62	108	877	594	250	953	18
% of Volume	67	74	70	99	98	100	83	83	82	47	48	45
Denied Entry Before	2	14	3	0	0	0	0	9	4	31	116	1
Denied Entry After	22	104	25	0	0	0	18	136	90	153	619	10

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	692.7
Denied Del/Veh (s)	597.5
Total Delay (hr)	124.6
Total Del/Veh (s)	143.0
Stop Delay (hr)	119.8
Stop Del/Veh (s)	137.5
Travel Dist (mi)	356.4
Travel Time (hr)	830.2
Vehicles Entered	2997
Vehicles Exited	2984
Hourly Exit Rate	2984
Input Volume	4033
% of Volume	74
Denied Entry Before	180
Denied Entry After	1177

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.2
Total Delay (hr)	0.7	2.7	3.4
Total Del/Veh (s)	4.1	45.1	14.9
Stop Delay (hr)	0.5	2.6	3.2
Stop Del/Veh (s)	3.2	43.2	13.7
Travel Dist (mi)	11.9	36.5	48.5
Travel Time (hr)	1.6	4.0	5.5
Vehicles Entered	612	217	829
Vehicles Exited	611	218	829
Hourly Exit Rate	611	218	829
Input Volume	624	211	834
% of Volume	98	103	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.7	0.1	0.1	0.1	0.1	0.0	1.0
Total Del/Veh (s)	3.6	2.6	11.1	0.4	19.2	9.1	2.6
Stop Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.3
Stop Del/Veh (s)	0.6	0.6	9.7	0.0	17.5	9.0	0.7
Travel Dist (mi)	74.6	13.1	0.7	12.7	0.8	0.3	102.1
Travel Time (hr)	3.3	0.6	0.1	0.5	0.1	0.0	4.6
Vehicles Entered	718	124	27	500	10	3	1382
Vehicles Exited	713	123	26	500	10	3	1375
Hourly Exit Rate	713	123	26	500	10	3	1375
Input Volume	874	153	26	508	10	3	1574
% of Volume	82	80	101	98	98	100	87
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.1
Total Delay (hr)	0.7	0.3	0.2	0.0	1.2
Total Del/Veh (s)	5.3	3.8	1.3	8.1	3.3
Stop Delay (hr)	0.2	0.1	0.0	0.0	0.3
Stop Del/Veh (s)	1.5	1.4	0.0	8.0	0.9
Travel Dist (mi)	30.5	21.3	43.2	0.3	95.3
Travel Time (hr)	1.7	1.3	2.0	0.0	5.0
Vehicles Entered	450	307	512	3	1272
Vehicles Exited	451	307	514	3	1275
Hourly Exit Rate	451	307	514	3	1275
Input Volume	544	357	520	3	1424
% of Volume	83	86	99	100	90
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.0	0.0	1.0	1.7	0.1	0.1	0.5
Total Delay (hr)	0.3	0.0	4.1	0.1	0.0	0.6	5.2
Total Del/Veh (s)	2.0	0.7	19.7	17.0	3.0	45.2	11.1
Stop Delay (hr)	0.1	0.0	3.3	0.1	0.0	0.6	4.0
Stop Del/Veh (s)	0.5	0.1	15.7	14.1	2.7	44.7	8.6
Travel Dist (mi)	12.1	4.3	44.5	1.3	0.6	1.9	64.7
Travel Time (hr)	0.8	0.3	6.1	0.2	0.0	0.7	8.1
Vehicles Entered	623	226	744	22	13	46	1674
Vehicles Exited	624	226	742	22	13	46	1673
Hourly Exit Rate	624	226	742	22	13	46	1673
Input Volume	861	309	754	23	14	45	2006
% of Volume	72	73	98	97	91	102	83
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Total Del/Veh (s)	6.4	3.5	0.3	0.1	4.7	1.9	1.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	5.7	3.7	0.0	0.0	1.3	0.2	0.5
Travel Dist (mi)	0.3	0.4	19.7	0.8	0.9	29.6	51.7
Travel Time (hr)	0.1	0.1	0.7	0.0	0.0	1.2	2.1
Vehicles Entered	23	33	294	12	6	204	572
Vehicles Exited	23	33	294	12	6	205	573
Hourly Exit Rate	23	33	294	12	6	205	573
Input Volume	24	35	298	14	7	228	606
% of Volume	97	94	99	84	83	90	94
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.2		0.0	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	4.5	2.6	0.3	0.0		0.4	0.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	3.6	2.7	0.0	0.0		0.1	0.1
Travel Dist (mi)	0.0	0.1	8.9	0.0	0.0	14.9	23.9
Travel Time (hr)	0.0	0.0	0.3	0.0	0.0	0.5	0.9
Vehicles Entered	2	3	302	1	0	225	533
Vehicles Exited	2	3	302	1	0	224	532
Hourly Exit Rate	2	3	302	1	0	224	532
Input Volume	2	3	309	1	1	247	563
% of Volume	100	100	98	100	0	91	94
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	712.8
Denied Del/Veh (s)	296.3
Total Delay (hr)	386.2
Total Del/Veh (s)	175.6
Stop Delay (hr)	338.3
Stop Del/Veh (s)	153.8
Travel Dist (mi)	4776.7
Travel Time (hr)	1270.9
Vehicles Entered	7463
Vehicles Exited	7378
Hourly Exit Rate	7378
Input Volume	42334
% of Volume	17
Denied Entry Before	180
Denied Entry After	1198

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	242	796	74	814	150	508	160	1818
Average Queue (ft)	96	252	35	341	97	259	113	1128
95th Queue (ft)	223	666	77	836	176	462	201	2304
Link Distance (ft)		1416		1216		1022		1984
Upstream Blk Time (%)		0		4				27
Queuing Penalty (veh)		0		0				0
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	2	14	18	46	2	25	2	53
Queuing Penalty (veh)	6	11	61	18	10	29	12	83

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	382	170	440	188	1031
Average Queue (ft)	160	97	297	22	670
95th Queue (ft)	345	223	434	111	1194
Link Distance (ft)	383		425	425	1022
Upstream Blk Time (%)	3		2	0	10
Queuing Penalty (veh)	16		10	1	60
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	34	6			
Queuing Penalty (veh)	134	8			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	B46	SB
Directions Served	LT	R	LT	R	L	T	T	R	T	T	T	L
Maximum Queue (ft)	295	38	269	230	200	341	354	150	462	461	203	175
Average Queue (ft)	77	9	197	102	185	288	323	91	331	355	97	157
95th Queue (ft)	203	33	284	186	239	408	365	198	557	565	229	222
Link Distance (ft)	1572	1572	256	256		253	253		383	383	130	
Upstream Blk Time (%)			5	0		44	72		17	25	17	
Queuing Penalty (veh)			13	1		204	328		76	111	156	
Storage Bay Dist (ft)					175			100				125
Storage Blk Time (%)					39	30	74	3				24
Queuing Penalty (veh)					102	85	77	8				66

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	450	516
Average Queue (ft)	386	394
95th Queue (ft)	507	621
Link Distance (ft)	425	425
Upstream Blk Time (%)	17	18
Queuing Penalty (veh)	77	83
Storage Bay Dist (ft)		
Storage Blk Time (%)	50	
Queuing Penalty (veh)	113	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	EB	WB	NB	NB	NB	SB	SB	B46	B20
Directions Served	LT	R	LTR	L	T	R	L	TR	T	T
Maximum Queue (ft)	317	110	107	350	1849	69	91	213	443	74
Average Queue (ft)	69	36	33	271	900	3	24	163	160	4
95th Queue (ft)	285	89	83	413	2274	32	68	264	421	42
Link Distance (ft)	1538		998		2363			130	383	253
Upstream Blk Time (%)					7			26	3	0
Queuing Penalty (veh)					0			182	22	0
Storage Bay Dist (ft)		90		325		85	80			
Storage Blk Time (%)	13	2		4	31		0	29		
Queuing Penalty (veh)	10	0		33	88		1	6		

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	EB	B48	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (ft)	21	94	18	35	83
Average Queue (ft)	1	9	2	1	29
95th Queue (ft)	12	56	25	18	62
Link Distance (ft)		80	78	324	828
Upstream Blk Time (%)		1	1		
Queuing Penalty (veh)		11	5		
Storage Bay Dist (ft)	50				
Storage Blk Time (%)	0	1			
Queuing Penalty (veh)	0	0			

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	27	23	48	374	94	112
Average Queue (ft)	2	2	5	109	36	30
95th Queue (ft)	12	40	27	297	72	82
Link Distance (ft)		233		519	1169	947
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		1				
Storage Bay Dist (ft)	50		50			
Storage Blk Time (%)		0	0	15		
Queuing Penalty (veh)		0	0	1		

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	107	462	255	6	94	267	120	445	134	323
Average Queue (ft)	18	373	72	0	20	213	96	168	100	149
95th Queue (ft)	66	550	221	6	65	312	142	365	159	278
Link Distance (ft)		344	239	239		233		719		1488
Upstream Blk Time (%)		23	1			16				
Queuing Penalty (veh)		208	6			92				
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	0	46			0	40	25	14	8	17
Queuing Penalty (veh)	0	10			2	7	41	28	16	26

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	273	300	150	105
Average Queue (ft)	174	30	37	66
95th Queue (ft)	316	158	106	105
Link Distance (ft)	256	597		64
Upstream Blk Time (%)	10			33
Queuing Penalty (veh)	37			72
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		1	1	
Queuing Penalty (veh)		4	3	

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	352	366	58	58
Average Queue (ft)	319	325	31	21
95th Queue (ft)	380	402	70	58
Link Distance (ft)	318	318	41	41
Upstream Blk Time (%)	25	33	24	14
Queuing Penalty (veh)	145	190	94	55
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	571	250	300	340	330	160	344	811	832	839	265	665
Average Queue (ft)	543	242	198	220	181	48	141	714	764	792	261	637
95th Queue (ft)	556	278	336	369	329	153	339	990	999	912	272	652
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	88		0	4	3			14	59	75		99
Queuing Penalty (veh)	0		0	17	13			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	83	37	1	9	28	0	0	17			97	3
Queuing Penalty (veh)	194	84	3	21	17	0	0	18			461	8

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	652
Average Queue (ft)	415
95th Queue (ft)	850
Link Distance (ft)	621
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	100	398
Average Queue (ft)	70	96
95th Queue (ft)	93	323
Link Distance (ft)	64	887
Upstream Blk Time (%)	8	
Queuing Penalty (veh)	47	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB	WB	B48	NB	NB
Directions Served	TR	L	T	T	L	R
Maximum Queue (ft)	100	57	54	13	38	29
Average Queue (ft)	9	16	2	0	9	2
95th Queue (ft)	100	45	27	11	33	15
Link Distance (ft)	519		78	80	440	440
Upstream Blk Time (%)	0	0	0	0		
Queuing Penalty (veh)	3	0	1	0		
Storage Bay Dist (ft)		50				
Storage Blk Time (%)		1	0			
Queuing Penalty (veh)		6	0			

Intersection: 36: Ravenswood Ave

Movement	EB	NB
Directions Served	TR	R
Maximum Queue (ft)	231	31
Average Queue (ft)	21	2
95th Queue (ft)	138	16
Link Distance (ft)	324	422
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	10	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 38: Ravenswood Ave

Movement	EB	WB	B27	NB	SB
Directions Served	T	TR	T	R	R
Maximum Queue (ft)	46	363	355	34	102
Average Queue (ft)	4	232	125	11	39
95th Queue (ft)	26	472	360	35	83
Link Distance (ft)	41	239	344	223	220
Upstream Blk Time (%)	1	20	2		
Queuing Penalty (veh)	5	150	13		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: Laurel St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	70	46
Average Queue (ft)	30	2
95th Queue (ft)	56	20
Link Distance (ft)	69	719
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Laurel St

Movement	WB
Directions Served	LR
Maximum Queue (ft)	32
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	90
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 4426

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	12.1	52.7	48.4	7.2	57.6	48.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	C-Max	Max	None
Avg. Green (s)	8.9	-11.6	-3.2	7.0	-11.2	-3.2	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	29	0	0	16	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	18	100	100	64	100	100	0
Cycles with Peds (%)	0	30	96	0	15	13	0

Controller Summary

Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	1	2	3	6
Movement(s) Served	NBL	SBT	EBL	NBT
Maximum Green (s)	44.5	63.5	28.5	112.5
Minimum Green (s)	7.0	7.0	8.0	7.0
Recall	None	C-Max	Min	C-Max
Avg. Green (s)	8.8	-1.2	12.9	-2.9
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	25	0
Cycles Maxed Out (%)	15	100	0	100
Cycles with Peds (%)	0	30	0	0

Controller Summary

Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Intersection: 3: Middlefield Road & Ringwood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	EBTL	SBL	NBT	WBTL
Maximum Green (s)	31.5	34.5	33.0	33.0	33.0	33.0
Minimum Green (s)	5.0	10.0	7.0	7.0	7.0	7.0
Recall	None	C-Max	None	Max	C-Max	None
Avg. Green (s)	-1.7	-4.1	-8.5	-5.9	0.2	3.4
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	9	0	0	0
Cycles @ Minimum (%)	0	0	9	0	0	0
Cycles Maxed Out (%)	100	100	30	100	100	67
Cycles with Peds (%)	0	96	35	0	100	29

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Intersection: 4: Middlefield Road & Seminary Dr

Phase	2	3	4	6	7	8
Movement(s) Served	EBTL	NBL	SBT	WBTL	SBL	NBT
Maximum Green (s)	22.0	26.9	56.1	22.0	5.0	78.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	C-Max	Min	None	C-Max
Avg. Green (s)	10.6	0.5	-4.9	9.1	7.1	-8.4
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	11	0	0	45	0
Cycles @ Minimum (%)	32	0	0	58	5	0
Cycles Maxed Out (%)	24	7	100	13	5	100
Cycles with Peds (%)	0	0	9	0	0	52

Controller Summary
Average Cycle Length (s): -11.0
Number of Complete Cycles : 21

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	4.9	39.5	23.8	4.9	39.5	23.2
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Max	C-Max	None	Max	Max
Avg. Green (s)	5.0	5.6	3.3	5.1	5.5	2.7
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	86	0	0	86	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	14	100	100	14	100	100
Cycles with Peds (%)	0	48	13	0	19	19

Controller Summary

Average Cycle Length (s): -3.0

Number of Complete Cycles : 29

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	Max	Max	None	C-Max
Avg. Green (s)	-12.4	0.4	-4.3	0.7	-10.9	4.3
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	100	100	100	100	100
Cycles with Peds (%)	0	45	0	67	0	29

Controller Summary

Average Cycle Length (s): -13.8

Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:30	4:30	4:30	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	8133	8176	8089	8096	8077	8198	8182
Vehs Exited	8112	8165	8152	8182	8062	8263	8218
Starting Vehs	514	466	530	542	486	501	508
Ending Vehs	535	477	467	456	501	436	472
Denied Entry Before	31	24	81	98	15	31	62
Denied Entry After	308	303	411	302	243	313	291
Travel Distance (mi)	5217	5190	5171	5360	5114	5284	5325
Travel Time (hr)	701.6	668.8	787.4	738.1	670.3	729.6	721.5
Total Delay (hr)	515.2	483.2	602.1	546.4	487.6	540.4	531.1
Total Stops	15012	14135	14604	15130	14867	15710	15310
Fuel Used (gal)	294.6	287.1	313.1	306.0	286.3	302.7	302.0

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	8118	8097	8092	8123
Vehs Exited	8064	8091	8039	8134
Starting Vehs	447	473	507	492
Ending Vehs	501	479	560	480
Denied Entry Before	53	1	23	40
Denied Entry After	256	268	329	301
Travel Distance (mi)	5187	5223	5141	5221
Travel Time (hr)	649.2	648.1	682.2	699.7
Total Delay (hr)	463.7	461.0	497.7	512.8
Total Stops	13332	14060	14542	14675
Fuel Used (gal)	281.2	282.3	288.6	294.4

Interval #0 Information Seeding

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1986	1975	1901	1992	1940	2002	2019
Vehs Exited	2015	1995	1929	2032	1935	1924	1976
Starting Vehs	514	466	530	542	486	501	508
Ending Vehs	485	446	502	502	491	579	551
Denied Entry Before	31	24	81	98	15	31	62
Denied Entry After	78	64	189	122	61	100	93
Travel Distance (mi)	1287	1263	1199	1338	1247	1267	1312
Travel Time (hr)	142.9	125.7	159.6	160.7	121.7	149.2	150.2
Total Delay (hr)	96.9	80.7	116.6	112.8	77.1	103.9	103.2
Total Stops	3660	3310	3413	3959	3227	3870	3801
Fuel Used (gal)	65.8	61.5	67.1	71.1	60.1	66.0	67.8

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1942	1963	1927	1961
Vehs Exited	1914	1967	1950	1964
Starting Vehs	447	473	507	492
Ending Vehs	475	469	484	493
Denied Entry Before	53	1	23	40
Denied Entry After	113	59	80	93
Travel Distance (mi)	1258	1276	1252	1270
Travel Time (hr)	134.2	124.7	128.4	139.7
Total Delay (hr)	89.3	79.1	83.6	94.3
Total Stops	3169	3322	3235	3497
Fuel Used (gal)	62.8	61.4	61.7	64.5

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2262	2273	2252	2209	2276	2334	2217
Vehs Exited	2146	2138	2147	2112	2152	2218	2089
Starting Vehs	485	446	502	502	491	579	551
Ending Vehs	601	581	607	599	615	695	679
Denied Entry Before	78	64	189	122	61	100	93
Denied Entry After	181	197	282	232	192	193	195
Travel Distance (mi)	1381	1365	1383	1379	1349	1429	1374
Travel Time (hr)	171.9	166.0	203.8	186.7	175.8	195.0	183.3
Total Delay (hr)	122.7	116.9	154.0	137.5	127.6	143.9	134.3
Total Stops	4092	3808	4153	4010	4274	4721	4120
Fuel Used (gal)	74.2	73.1	82.0	77.6	75.1	81.3	77.3

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2233	2212	2179	2240
Vehs Exited	2150	2092	2105	2134
Starting Vehs	475	469	484	493
Ending Vehs	558	589	558	598
Denied Entry Before	113	59	80	93
Denied Entry After	165	153	203	198
Travel Distance (mi)	1367	1356	1336	1372
Travel Time (hr)	164.1	160.8	164.2	177.2
Total Delay (hr)	115.3	112.3	116.4	128.1
Total Stops	3506	3710	3765	4015
Fuel Used (gal)	72.5	71.2	71.9	75.6

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1960	1974	2017	1955	1925	1889	2008
Vehs Exited	2038	2035	2103	2019	2010	2091	2167
Starting Vehs	601	581	607	599	615	695	679
Ending Vehs	523	520	521	535	530	493	520
Denied Entry Before	181	197	282	232	192	193	195
Denied Entry After	263	251	344	276	212	264	250
Travel Distance (mi)	1295	1276	1322	1325	1256	1321	1377
Travel Time (hr)	186.9	186.4	210.3	197.2	188.7	197.8	199.7
Total Delay (hr)	140.4	140.7	163.1	149.8	143.9	150.4	150.5
Total Stops	3722	3658	3825	3637	3740	4019	4155
Fuel Used (gal)	76.3	75.9	82.2	79.4	76.1	79.9	81.6

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1897	1913	2032	1954
Vehs Exited	1969	2011	2030	2049
Starting Vehs	558	589	558	598
Ending Vehs	486	491	560	506
Denied Entry Before	165	153	203	198
Denied Entry After	228	227	228	252
Travel Distance (mi)	1279	1292	1318	1306
Travel Time (hr)	168.8	176.9	190.7	190.3
Total Delay (hr)	123.0	130.4	143.4	143.5
Total Stops	3337	3543	3791	3741
Fuel Used (gal)	71.4	73.8	77.7	77.4

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1925	1954	1919	1940	1936	1973	1938
Vehs Exited	1913	1997	1973	2019	1965	2030	1986
Starting Vehs	523	520	521	535	530	493	520
Ending Vehs	535	477	467	456	501	436	472
Denied Entry Before	263	251	344	276	212	264	250
Denied Entry After	308	303	411	302	243	313	291
Travel Distance (mi)	1254	1285	1268	1319	1262	1268	1261
Travel Time (hr)	199.8	190.8	213.8	193.5	184.0	187.6	188.4
Total Delay (hr)	155.2	144.9	168.4	146.3	139.1	142.2	143.0
Total Stops	3538	3359	3213	3524	3626	3100	3234
Fuel Used (gal)	78.3	76.6	81.7	77.9	75.0	75.6	75.3

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	2046	2009	1954	1953
Vehs Exited	2031	2021	1954	1988
Starting Vehs	486	491	560	506
Ending Vehs	501	479	560	480
Denied Entry Before	228	227	228	252
Denied Entry After	256	268	329	301
Travel Distance (mi)	1284	1299	1235	1273
Travel Time (hr)	182.0	185.7	198.8	192.5
Total Delay (hr)	136.1	139.3	154.4	146.9
Total Stops	3320	3485	3751	3412
Fuel Used (gal)	74.5	76.0	77.4	76.8

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Denied Del/Veh (s)	3.0	0.4	0.5	3.6	0.2	0.2	0.1	0.0	0.0	1.9	0.6	0.6
Total Delay (hr)	1.9	2.1	0.7	0.2	1.0	0.5	1.3	5.0	0.1	0.5	2.4	0.7
Total Del/Veh (s)	57.9	48.9	49.9	66.8	42.0	40.0	33.6	23.8	23.4	28.3	19.8	18.1
Stop Delay (hr)	1.7	1.9	0.7	0.2	0.9	0.5	0.9	2.8	0.1	0.4	1.5	0.5
Stop Del/Veh (s)	53.9	43.3	46.7	63.2	37.4	37.6	23.1	13.4	13.9	21.8	12.0	12.3
Travel Dist (mi)	30.5	40.9	13.6	3.0	18.7	10.4	27.5	151.6	3.3	23.1	161.5	53.9
Travel Time (hr)	3.0	3.5	1.2	0.4	1.6	0.9	2.3	10.2	0.2	1.3	7.9	2.7
Vehicles Entered	114	153	51	13	82	46	134	741	16	61	428	143
Vehicles Exited	112	150	50	13	84	46	134	746	16	62	433	144
Hourly Exit Rate	112	150	50	13	84	46	134	746	16	62	433	144
Input Volume	117	145	49	12	91	44	150	830	18	65	432	143
% of Volume	96	103	103	106	93	105	89	90	88	95	100	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	16.4
Total Del/Veh (s)	29.2
Stop Delay (hr)	11.9
Stop Del/Veh (s)	21.2
Travel Dist (mi)	537.9
Travel Time (hr)	35.3
Vehicles Entered	1982
Vehicles Exited	1990
Hourly Exit Rate	1990
Input Volume	2097
% of Volume	95
Denied Entry Before	0
Denied Entry After	0

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0		0.0	0.1	0.1	0.2	0.7	0.1
Total Delay (hr)	2.7	0.0	2.6	5.2	2.1	7.3	1.5	21.5
Total Del/Veh (s)	51.8		20.2	35.3	10.3	62.2	56.8	31.8
Stop Delay (hr)	2.4	0.0	1.8	4.3	0.8	5.9	1.2	16.5
Stop Del/Veh (s)	45.7		14.0	28.9	4.1	50.5	47.5	24.5
Travel Dist (mi)	15.5	0.0	33.7	48.8	66.9	83.3	18.7	266.9
Travel Time (hr)	3.3	0.0	3.9	7.4	4.5	10.2	2.2	31.5
Vehicles Entered	185	0	462	531	719	414	93	2404
Vehicles Exited	186	0	464	530	717	411	92	2400
Hourly Exit Rate	186	0	464	530	717	411	92	2400
Input Volume	188	0	473	582	823	413	93	2572
% of Volume	99	0	98	91	87	100	99	93
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	116.5	30.3	26.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	953.3	949.8	955.1	0.2	0.4	0.1	0.2	0.5	0.9	0.0	0.0	0.0
Total Delay (hr)	64.5	17.5	12.9	1.4	0.5	2.3	1.3	12.9	0.8	8.6	5.5	0.2
Total Del/Veh (s)	751.7	761.2	746.9	71.5	57.2	32.5	91.6	60.7	36.1	89.3	38.2	31.9
Stop Delay (hr)	64.2	17.4	12.8	1.3	0.4	2.2	1.3	11.6	0.7	7.8	4.6	0.1
Stop Del/Veh (s)	747.8	756.1	742.9	68.9	54.0	31.0	87.4	54.6	32.4	81.0	31.8	27.7
Travel Dist (mi)	72.2	19.6	15.4	4.0	1.6	15.0	3.1	45.8	4.6	31.0	47.6	1.7
Travel Time (hr)	183.6	48.6	39.4	1.5	0.5	3.1	1.5	14.5	1.0	9.9	7.4	0.2
Vehicles Entered	241	64	52	68	28	255	52	760	75	334	512	18
Vehicles Exited	234	64	48	67	29	254	51	758	74	339	516	18
Hourly Exit Rate	234	64	48	67	29	254	51	758	74	339	516	18
Input Volume	405	108	90	65	26	255	52	741	74	334	523	17
% of Volume	58	59	53	103	109	100	98	102	100	101	99	104
Denied Entry Before	26	6	7	0	0	0	0	0	0	0	0	0
Denied Entry After	199	51	46	0	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	173.0
Denied Del/Veh (s)	226.1
Total Delay (hr)	128.3
Total Del/Veh (s)	178.8
Stop Delay (hr)	124.4
Stop Del/Veh (s)	173.4
Travel Dist (mi)	261.5
Travel Time (hr)	311.2
Vehicles Entered	2459
Vehicles Exited	2452
Hourly Exit Rate	2452
Input Volume	2692
% of Volume	91
Denied Entry Before	39
Denied Entry After	296

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.6
Denied Del/Veh (s)	0.9	2.6	0.1	0.1	1.3	0.7	1.3	0.2	0.8	1.3	1.1
Total Delay (hr)	3.0	5.9	0.1	0.1	1.2	12.1	0.1	0.8	4.0	0.1	27.4
Total Del/Veh (s)	80.4	53.9	33.7	19.2	86.2	59.7	52.0	81.0	23.6	19.9	49.2
Stop Delay (hr)	2.7	5.2	0.1	0.1	1.0	8.9	0.1	0.8	3.3	0.0	22.3
Stop Del/Veh (s)	72.5	47.6	32.1	18.8	75.0	44.0	38.6	77.8	19.5	17.7	40.1
Travel Dist (mi)	38.3	112.8	2.0	5.0	21.6	316.9	4.1	1.3	21.3	0.4	523.6
Travel Time (hr)	4.4	10.2	0.2	0.3	2.0	22.9	0.3	0.9	4.8	0.1	46.1
Vehicles Entered	131	384	10	26	48	706	9	36	602	10	1962
Vehicles Exited	132	385	10	26	49	714	9	35	603	10	1973
Hourly Exit Rate	132	385	10	26	49	714	9	35	603	10	1973
Input Volume	135	378	10	23	52	695	8	37	642	11	1991
% of Volume	98	102	100	114	95	103	109	94	94	93	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.0	0.3	0.2	0.0	0.1	0.0	0.6
Total Del/Veh (s)	5.9	1.5	1.1	0.8	29.4	10.6	1.7
Stop Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.0	0.3
Stop Del/Veh (s)	4.5	0.9	0.1	0.2	27.6	10.3	0.9
Travel Dist (mi)	0.2	17.3	44.1	0.5	2.3	0.9	65.2
Travel Time (hr)	0.0	0.9	1.7	0.0	0.2	0.1	2.9
Vehicles Entered	6	691	617	6	15	6	1341
Vehicles Exited	6	691	617	6	14	6	1340
Hourly Exit Rate	6	691	617	6	14	6	1340
Input Volume	7	702	672	7	16	5	1409
% of Volume	86	98	92	83	89	114	95
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: 4th St/Pine St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0
Total Delay (hr)	0.0	0.5	0.0	0.1	4.0	0.0	0.1	0.1	0.0	0.3	5.1
Total Del/Veh (s)	13.7	2.4	1.6	26.8	21.4	20.3	33.1	12.9	47.3	59.8	12.6
Stop Delay (hr)	0.0	0.0	0.0	0.1	2.8	0.0	0.1	0.1	0.0	0.3	3.4
Stop Del/Veh (s)	10.7	0.0	0.1	21.0	14.9	15.3	31.3	12.4	45.3	59.5	8.4
Travel Dist (mi)	0.2	38.5	1.5	1.5	73.7	0.6	1.4	5.1	0.5	3.6	126.6
Travel Time (hr)	0.0	1.8	0.1	0.2	6.5	0.1	0.1	0.3	0.1	0.5	9.6
Vehicles Entered	4	687	26	14	664	6	7	24	3	19	1454
Vehicles Exited	4	686	26	14	665	6	6	24	3	19	1453
Hourly Exit Rate	4	686	26	14	665	6	6	24	3	19	1453
Input Volume	4	693	26	14	717	5	8	21	5	18	1511
% of Volume	100	99	99	98	93	120	75	116	63	104	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.3	2.9	0.3	0.3
Total Delay (hr)	1.6	5.6	0.5	0.3	4.7	0.3	4.8	3.5	0.9	1.2	3.2	0.5
Total Del/Veh (s)	71.8	32.2	28.4	51.9	27.2	23.3	83.1	76.6	77.2	75.2	80.5	76.3
Stop Delay (hr)	1.5	4.0	0.4	0.3	3.7	0.3	4.4	3.2	0.8	1.1	3.0	0.5
Stop Del/Veh (s)	64.4	23.4	21.5	47.2	21.2	19.6	76.2	69.1	72.1	70.5	74.1	72.5
Travel Dist (mi)	6.5	50.2	5.6	1.2	34.1	2.7	29.6	23.1	5.5	15.9	41.1	6.6
Travel Time (hr)	1.9	7.3	0.8	0.4	5.9	0.5	5.9	4.3	1.1	1.8	4.6	0.7
Vehicles Entered	80	616	68	21	620	50	202	160	38	55	140	23
Vehicles Exited	80	616	68	21	621	50	203	161	38	54	140	22
Hourly Exit Rate	80	616	68	21	621	50	203	161	38	54	140	22
Input Volume	80	622	68	24	670	50	203	157	39	54	139	24
% of Volume	100	99	100	88	93	101	100	103	97	100	101	91
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.2
Total Delay (hr)	27.2
Total Del/Veh (s)	46.6
Stop Delay (hr)	23.1
Stop Del/Veh (s)	39.6
Travel Dist (mi)	222.0
Travel Time (hr)	35.1
Vehicles Entered	2073
Vehicles Exited	2074
Hourly Exit Rate	2074
Input Volume	2128
% of Volume	97
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.1	0.4	3.5	0.0	0.0	0.1	0.4
Total Delay (hr)	0.1	0.4	0.1	0.0	0.2	0.0	0.1	0.8
Total Del/Veh (s)	4.9	3.0	1.1	0.3	14.6	1.1	5.8	3.0
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.2	0.0	0.1	0.3
Stop Del/Veh (s)	1.9	0.5	0.4	0.0	13.6	0.3	6.0	1.3
Travel Dist (mi)	3.4	26.4	34.9	6.3	0.8	0.0	0.8	72.6
Travel Time (hr)	0.2	1.5	1.3	0.3	0.2	0.0	0.1	3.7
Vehicles Entered	56	438	304	55	41	2	43	939
Vehicles Exited	56	438	304	55	41	2	43	939
Hourly Exit Rate	56	438	304	55	41	2	43	939
Input Volume	62	472	304	54	43	2	39	976
% of Volume	91	93	100	102	95	133	111	96
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	3.7	0.7	4.4
Total Del/Veh (s)	12.7	2.9	8.4
Stop Delay (hr)	3.2	0.5	3.7
Stop Del/Veh (s)	10.9	2.3	7.1
Travel Dist (mi)	80.8	15.8	96.6
Travel Time (hr)	7.5	1.3	8.8
Vehicles Entered	1051	821	1872
Vehicles Exited	1052	821	1873
Hourly Exit Rate	1052	821	1873
Input Volume	1049	868	1917
% of Volume	100	95	98
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.5	0.2	0.0	0.0	0.0	0.3	2.1	0.9	0.1	0.1	0.0
Denied Del/Veh (s)	6.8	6.6	8.8	0.0	0.0	0.1	6.9	5.3	5.4	2.5	0.3	0.4
Total Delay (hr)	1.3	8.8	2.2	9.0	4.6	0.6	4.1	24.1	7.0	3.8	9.7	0.4
Total Del/Veh (s)	100.9	104.9	90.4	64.5	65.4	26.4	106.4	60.4	41.9	82.3	33.6	27.2
Stop Delay (hr)	1.2	8.0	2.1	8.4	4.2	0.6	3.6	18.9	5.8	3.5	7.6	0.3
Stop Del/Veh (s)	93.8	96.1	83.8	59.8	59.6	23.9	95.0	47.4	34.7	75.3	26.4	23.0
Travel Dist (mi)	4.5	29.6	8.7	36.6	18.3	6.1	20.5	210.1	88.7	19.8	120.9	5.7
Travel Time (hr)	1.5	10.3	2.8	10.5	5.2	0.9	5.1	33.2	11.3	4.7	13.9	0.6
Vehicles Entered	45	296	87	493	246	82	136	1398	592	166	1011	48
Vehicles Exited	46	296	88	494	247	82	137	1396	588	167	1014	48
Hourly Exit Rate	46	296	88	494	247	82	137	1396	588	167	1014	48
Input Volume	48	290	86	522	260	86	132	1394	590	169	1021	44
% of Volume	95	102	102	95	95	95	104	100	100	99	99	108
Denied Entry Before	0	1	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	4	1	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	4.3
Denied Del/Veh (s)	3.3
Total Delay (hr)	75.6
Total Del/Veh (s)	57.8
Stop Delay (hr)	64.2
Stop Del/Veh (s)	49.1
Travel Dist (mi)	569.5
Travel Time (hr)	100.1
Vehicles Entered	4600
Vehicles Exited	4603
Hourly Exit Rate	4603
Input Volume	4643
% of Volume	99
Denied Entry Before	1
Denied Entry After	5

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1
Total Delay (hr)	0.1	0.0	0.2
Total Del/Veh (s)	3.5	1.8	2.8
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	2.5	0.6	1.7
Travel Dist (mi)	2.4	14.3	16.7
Travel Time (hr)	0.3	0.5	0.8
Vehicles Entered	115	85	200
Vehicles Exited	115	85	200
Hourly Exit Rate	115	85	200
Input Volume	120	82	202
% of Volume	96	103	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.6	0.0	0.0	0.2	0.7	0.0	1.5
Total Del/Veh (s)	3.1	2.4	8.6	1.0	34.8	10.8	3.8
Stop Delay (hr)	0.2	0.0	0.0	0.1	0.6	0.0	0.9
Stop Del/Veh (s)	1.0	1.2	7.1	0.4	32.6	10.6	2.4
Travel Dist (mi)	73.5	3.3	0.1	15.6	5.6	1.3	99.4
Travel Time (hr)	3.1	0.2	0.0	0.7	0.9	0.1	4.9
Vehicles Entered	680	31	4	619	68	15	1417
Vehicles Exited	679	31	4	619	68	15	1416
Hourly Exit Rate	679	31	4	619	68	15	1416
Input Volume	688	29	5	672	67	18	1479
% of Volume	99	107	80	92	101	85	96
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.7	1.4	0.0	0.1	0.4
Total Delay (hr)	1.3	0.1	0.2	0.1	1.8
Total Del/Veh (s)	7.3	5.4	1.3	21.5	4.6
Stop Delay (hr)	0.7	0.1	0.0	0.1	0.9
Stop Del/Veh (s)	4.1	3.6	0.1	21.2	2.4
Travel Dist (mi)	45.2	4.8	53.4	1.4	104.8
Travel Time (hr)	3.0	0.3	2.5	0.2	5.9
Vehicles Entered	639	67	627	18	1351
Vehicles Exited	640	67	624	18	1349
Hourly Exit Rate	640	67	624	18	1349
Input Volume	650	67	681	20	1418
% of Volume	98	100	92	91	95
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.1	0.1	0.0
Total Delay (hr)	0.3	0.1	2.7	0.1	0.2	0.2	3.5
Total Del/Veh (s)	1.4	0.9	11.9	10.2	5.5	24.7	6.2
Stop Delay (hr)	0.1	0.0	1.9	0.1	0.2	0.2	2.4
Stop Del/Veh (s)	0.4	0.1	8.4	7.6	5.0	24.4	4.2
Travel Dist (mi)	12.4	7.5	49.1	3.3	4.1	1.1	77.5
Travel Time (hr)	0.7	0.6	4.7	0.3	0.4	0.2	6.9
Vehicles Entered	654	399	800	53	109	25	2040
Vehicles Exited	654	399	798	53	109	26	2039
Hourly Exit Rate	654	399	798	53	109	26	2039
Input Volume	661	389	848	54	108	25	2084
% of Volume	99	103	94	99	101	105	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.2	0.5
Total Del/Veh (s)	7.2	4.6	2.1	2.6	6.7	2.6	2.5
Stop Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Stop Del/Veh (s)	6.2	4.6	1.3	2.3	2.9	0.3	1.3
Travel Dist (mi)	0.2	0.4	25.0	2.5	2.3	31.8	62.3
Travel Time (hr)	0.0	0.1	1.1	0.1	0.1	1.3	2.7
Vehicles Entered	12	20	373	38	16	218	677
Vehicles Exited	12	20	373	38	16	218	677
Hourly Exit Rate	12	20	373	38	16	218	677
Input Volume	13	19	373	36	16	217	674
% of Volume	91	107	100	106	98	100	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.4	0.3	0.0	0.0	0.3
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	4.6	4.3	0.8	0.1	2.1	0.5	0.7
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	3.8	4.4	0.3	0.0	0.3	0.0	0.2
Travel Dist (mi)	0.0	0.0	11.1	0.1	0.1	15.1	26.5
Travel Time (hr)	0.0	0.0	0.5	0.0	0.0	0.6	1.1
Vehicles Entered	2	2	409	4	2	225	644
Vehicles Exited	2	2	409	4	2	225	644
Hourly Exit Rate	2	2	409	4	2	225	644
Input Volume	2	2	407	2	2	226	640
% of Volume	100	100	101	200	100	100	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	178.7
Denied Del/Veh (s)	76.4
Total Delay (hr)	334.2
Total Del/Veh (s)	139.7
Stop Delay (hr)	283.5
Stop Del/Veh (s)	118.5
Travel Dist (mi)	5221.3
Travel Time (hr)	699.7
Vehicles Entered	8123
Vehicles Exited	8134
Hourly Exit Rate	8134
Input Volume	42720
% of Volume	19
Denied Entry Before	40
Denied Entry After	301

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	216	304	65	207	149	791	159	430
Average Queue (ft)	99	148	17	94	83	334	53	214
95th Queue (ft)	182	255	52	171	163	674	135	371
Link Distance (ft)		1416		1195		1023		1984
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	0	2	2	36	1	20	0	17
Queuing Penalty (veh)	1	2	3	5	7	30	1	11

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	398	170	453	467	670
Average Queue (ft)	242	129	288	191	362
95th Queue (ft)	449	243	455	421	693
Link Distance (ft)	384		424	424	1023
Upstream Blk Time (%)	6		2	1	0
Queuing Penalty (veh)	42		14	9	1
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	36	6			
Queuing Penalty (veh)	169	11			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	B46	SB
Directions Served	LT	R	LT	R	L	T	T	R	T	T	T	L
Maximum Queue (ft)	1659	1652	208	263	200	333	345	150	368	416	113	175
Average Queue (ft)	1632	1629	88	136	75	263	310	72	93	139	7	168
95th Queue (ft)	1649	1643	172	244	187	375	372	191	294	361	61	189
Link Distance (ft)	1615	1615	256	256		253	253		380	380	132	
Upstream Blk Time (%)	97	95	0	1		22	46		1	2	1	
Queuing Penalty (veh)	0	0	0	3		95	195		3	10	7	
Storage Bay Dist (ft)					175			100				125
Storage Blk Time (%)					0	36	57					53
Queuing Penalty (veh)					0	19	43					139

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	438	505
Average Queue (ft)	319	315
95th Queue (ft)	450	597
Link Distance (ft)	424	424
Upstream Blk Time (%)	3	10
Queuing Penalty (veh)	13	45
Storage Bay Dist (ft)		
Storage Blk Time (%)	15	
Queuing Penalty (veh)	52	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	EB	WB	NB	NB	NB	SB	SB	B46	B20	B20
Directions Served	LT	R	LTR	L	T	R	L	TR	T	T	
Maximum Queue (ft)	712	115	71	349	932	97	104	221	456	269	196
Average Queue (ft)	309	109	19	95	531	5	41	192	238	66	24
95th Queue (ft)	811	133	50	292	985	44	91	258	505	219	124
Link Distance (ft)	1549		992		2349			132	380	253	253
Upstream Blk Time (%)	0							37	7	1	0
Queuing Penalty (veh)	0							253	45	2	0
Storage Bay Dist (ft)		90		325		85	80				
Storage Blk Time (%)	18	31			49		2	42			
Queuing Penalty (veh)	69	42			29		12	16			

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	EB	B48	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (ft)	32	114	60	68	56
Average Queue (ft)	3	17	7	4	18
95th Queue (ft)	18	86	52	40	48
Link Distance (ft)		79	78	324	828
Upstream Blk Time (%)		3	1		
Queuing Penalty (veh)		22	9		
Storage Bay Dist (ft)	50				
Storage Blk Time (%)	0	3			
Queuing Penalty (veh)	0	0			

Intersection: 6: 4th St/Pine St & Ravenswood Ave

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	29	16	48	530	72	88
Average Queue (ft)	2	1	8	262	23	23
95th Queue (ft)	16	7	35	535	54	64
Link Distance (ft)		233		520	1132	991
Upstream Blk Time (%)				1		
Queuing Penalty (veh)				10		
Storage Bay Dist (ft)	50		50			
Storage Blk Time (%)	0		0	27		
Queuing Penalty (veh)	0		2	4		

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	109	465	272	253	89	264	120	578	134	373
Average Queue (ft)	67	357	94	52	21	231	103	333	68	187
95th Queue (ft)	126	556	257	193	63	294	149	594	145	334
Link Distance (ft)		343	238	238		233		723		1541
Upstream Blk Time (%)		18	4	2		27		1		
Queuing Penalty (veh)		140	14	7		204		5		
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	10	33			1	44	37	35	1	34
Queuing Penalty (veh)	67	27			7	10	71	71	2	19

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	191	87	9	73
Average Queue (ft)	35	5	0	36
95th Queue (ft)	116	38	6	63
Link Distance (ft)	256	605		65
Upstream Blk Time (%)	0			2
Queuing Penalty (veh)	0			1
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	310	335	63	58
Average Queue (ft)	102	127	22	20
95th Queue (ft)	278	336	63	61
Link Distance (ft)	318	318	41	41
Upstream Blk Time (%)	0	1	12	11
Queuing Penalty (veh)	0	7	54	46
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	505	250	299	338	328	160	345	812	787	780	265	569
Average Queue (ft)	305	200	200	220	209	73	231	595	554	376	197	346
95th Queue (ft)	558	288	312	336	354	184	414	889	854	817	314	504
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	9		0	2	5			8	7	7		0
Queuing Penalty (veh)	0		0	9	21			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	23	18	1	5	29	0	0	35			3	20
Queuing Penalty (veh)	53	35	4	13	25	0	2	46			17	33

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	486
Average Queue (ft)	299
95th Queue (ft)	434
Link Distance (ft)	621
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	64	41
Average Queue (ft)	36	2
95th Queue (ft)	56	22
Link Distance (ft)	65	887
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB	WB	B48	NB	NB
Directions Served	TR	L	T	T	L	R
Maximum Queue (ft)	160	33	118	35	121	44
Average Queue (ft)	14	3	10	2	46	13
95th Queue (ft)	116	18	65	23	92	38
Link Distance (ft)	520		78	79	437	437
Upstream Blk Time (%)	0		1	0		
Queuing Penalty (veh)	0		8	2		
Storage Bay Dist (ft)		50				
Storage Blk Time (%)		0	1			
Queuing Penalty (veh)		0	0			

Intersection: 36: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	T	R
Maximum Queue (ft)	263	3	37
Average Queue (ft)	55	0	16
95th Queue (ft)	233	3	42
Link Distance (ft)	324	384	425
Upstream Blk Time (%)	2		
Queuing Penalty (veh)	15		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	B27	NB	SB
Directions Served	T	TR	TR	T	R	R
Maximum Queue (ft)	42	35	348	334	85	56
Average Queue (ft)	5	3	184	78	37	19
95th Queue (ft)	30	22	436	266	62	48
Link Distance (ft)	41	41	238	343	195	232
Upstream Blk Time (%)	2	1	12	0		
Queuing Penalty (veh)	10	6	105	3		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 42: Laurel St

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	49	36	114
Average Queue (ft)	20	7	13
95th Queue (ft)	47	77	61
Link Distance (ft)	95	297	723
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		3	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Laurel St

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	29	18	9
Average Queue (ft)	4	3	0
95th Queue (ft)	20	38	6
Link Distance (ft)	85	141	297
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 2611

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	5.5	78.3	29.4	9.8	74.0	29.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	C-Max	Max	None
Avg. Green (s)	5.7	9.2	7.2	7.4	5.8	7.2	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	46	0	0	24	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	50	100	100	16	100	100	0
Cycles with Peds (%)	0	35	96	0	15	8	0

Controller Summary
Average Cycle Length (s): -12.5
Number of Complete Cycles : 23

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	1	2	3	6
Movement(s) Served	NBL	SBT	EBL	NBT
Maximum Green (s)	33.1	26.4	22.0	64.0
Minimum Green (s)	7.0	7.0	8.0	7.0
Recall	None	C-Max	Min	C-Max
Avg. Green (s)	-3.1	-1.5	-3.5	-4.1
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	22	0
Cycles Maxed Out (%)	44	100	11	100
Cycles with Peds (%)	0	11	0	0

Controller Summary
Average Cycle Length (s): -1.4
Number of Complete Cycles : 34

Intersection: 3: Middlefield Road & Ringwood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	12.5	66.8	59.7	37.6	41.7	33.0
Minimum Green (s)	5.0	10.0	7.0	7.0	7.0	7.0
Recall	None	C-Max	None	Ped	None	None
Avg. Green (s)	11.4	-15.2	-8.2	6.6	-9.9	-1.5
g/C Ratio	0.71	-1.00	-0.54	0.37	-0.65	-0.10
Cycles Skipped (%)	6	0	0	14	0	0
Cycles @ Minimum (%)	6	0	0	0	0	0
Cycles Maxed Out (%)	65	100	0	10	71	100
Cycles with Peds (%)	0	100	24	86	41	44

Controller Summary
Average Cycle Length (s): 15.2
Number of Complete Cycles : 15

Intersection: 4: Middlefield Road & Seminary Dr

Phase	2	3	4	6	7	8
Movement(s) Served	EBTL	NBL	SBT	WBTL	SBL	NBT
Maximum Green (s)	22.0	5.3	47.7	22.0	5.0	48.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0
Recall	Max	None	C-Max	Max	None	C-Max
Avg. Green (s)	0.9	5.4	5.6	0.2	5.1	7.3
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	14	0	0	28	0
Cycles @ Minimum (%)	0	0	0	0	72	0
Cycles Maxed Out (%)	100	86	100	100	72	100
Cycles with Peds (%)	0	0	13	3	0	23

Controller Summary
Average Cycle Length (s): -6.4
Number of Complete Cycles : 27

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	5.1	93.5	36.4	9.3	89.3	26.4
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Min	C-Max	None	Min	Max
Avg. Green (s)	7.1	14.6	10.2	8.1	8.1	-6.4
g/C Ratio	0.06	0.90	0.63	0.32	0.50	-0.39
Cycles Skipped (%)	87	0	0	35	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	13	50	100	24	50	100
Cycles with Peds (%)	0	56	53	0	50	50

Controller Summary
Average Cycle Length (s): 16.2

Number of Complete Cycles : 16

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	None	None	None	C-Max
Avg. Green (s)	-10.8	0.4	-5.4	0.2	-11.6	5.2
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	15	0
Cycles @ Minimum (%)	0	0	0	0	4	0
Cycles Maxed Out (%)	100	100	67	92	15	100
Cycles with Peds (%)	0	60	0	79	0	23

Controller Summary
Average Cycle Length (s): -13.8

Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	7498	7482	7827	7755	7536	7700	7727
Vehs Exited	7466	7342	7696	7688	7474	7724	7701
Starting Vehs	464	460	484	458	478	496	504
Ending Vehs	496	600	615	525	540	472	530
Denied Entry Before	289	196	129	105	134	166	176
Denied Entry After	1363	1447	910	902	1280	1108	1193
Travel Distance (mi)	4772	4736	4843	4890	4762	4925	4926
Travel Time (hr)	1369.1	1435.3	1067.9	1027.6	1347.6	1165.1	1280.8
Total Delay (hr)	1197.7	1264.9	893.3	851.6	1176.3	987.8	1103.3
Total Stops	14462	15929	16184	15209	15456	15793	15779
Fuel Used (gal)	435.5	449.1	368.8	361.4	430.3	393.1	418.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:00	8:00	8:00	8:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	7708	7630	7464	7632
Vehs Exited	7694	7455	7422	7567
Starting Vehs	452	515	474	469
Ending Vehs	466	690	516	544
Denied Entry Before	58	181	80	149
Denied Entry After	1032	1225	1342	1178
Travel Distance (mi)	4863	4753	4784	4825
Travel Time (hr)	1091.1	1335.3	1319.3	1243.9
Total Delay (hr)	916.2	1164.1	1147.1	1070.2
Total Stops	15364	16900	15508	15663
Fuel Used (gal)	374.5	428.4	424.8	408.4

Interval #0 Information Seeding

Start Time	6:30
End Time	7:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1666	1727	1780	1749	1654	1762	1686
Vehs Exited	1704	1705	1830	1793	1716	1880	1733
Starting Vehs	464	460	484	458	478	496	504
Ending Vehs	426	482	434	414	416	378	457
Denied Entry Before	289	196	129	105	134	166	176
Denied Entry After	547	464	313	291	444	371	471
Travel Distance (mi)	1117	1143	1134	1153	1137	1187	1153
Travel Time (hr)	208.0	200.3	172.1	157.3	181.8	174.1	187.3
Total Delay (hr)	168.0	159.1	131.3	115.8	141.0	131.4	145.9
Total Stops	2957	3487	3105	3039	3189	3160	3186
Fuel Used (gal)	76.6	75.2	68.6	65.7	70.7	70.8	72.5

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1836	1823	1682	1733
Vehs Exited	1844	1833	1721	1775
Starting Vehs	452	515	474	469
Ending Vehs	444	505	435	428
Denied Entry Before	58	181	80	149
Denied Entry After	260	330	481	395
Travel Distance (mi)	1182	1165	1150	1152
Travel Time (hr)	143.6	183.7	182.1	179.0
Total Delay (hr)	101.1	141.9	140.7	137.6
Total Stops	3184	3768	3137	3210
Fuel Used (gal)	63.3	72.6	71.0	70.7

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2283	2280	2392	2347	2412	2411	2339
Vehs Exited	2107	2010	2161	2128	2072	2093	2109
Starting Vehs	426	482	434	414	416	378	457
Ending Vehs	602	752	665	633	756	696	687
Denied Entry Before	547	464	313	291	444	371	471
Denied Entry After	949	844	530	526	754	618	769
Travel Distance (mi)	1361	1269	1375	1331	1322	1349	1323
Travel Time (hr)	315.2	312.9	249.2	234.7	307.6	261.8	294.2
Total Delay (hr)	266.5	267.3	199.7	186.8	259.9	213.2	246.4
Total Stops	3909	4115	4367	4366	4672	4313	4106
Fuel Used (gal)	106.7	103.3	92.0	87.9	104.0	94.0	100.7

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2314	2181	2266	2319
Vehs Exited	2060	1944	2019	2070
Starting Vehs	444	505	435	428
Ending Vehs	698	742	682	686
Denied Entry Before	260	330	481	395
Denied Entry After	619	812	891	727
Travel Distance (mi)	1322	1216	1312	1318
Travel Time (hr)	257.5	293.8	311.7	283.9
Total Delay (hr)	210.0	249.9	264.5	236.4
Total Stops	4367	4486	4218	4291
Fuel Used (gal)	92.3	98.0	104.5	98.3

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1743	1687	1821	1745	1613	1701	1786
Vehs Exited	1843	1800	1896	1904	1763	1794	1874
Starting Vehs	602	752	665	633	756	696	687
Ending Vehs	502	639	590	474	606	603	599
Denied Entry Before	949	844	530	526	754	618	769
Denied Entry After	1212	1218	674	772	1154	916	1051
Travel Distance (mi)	1133	1113	1156	1191	1060	1142	1204
Travel Time (hr)	407.6	441.0	301.2	297.2	400.9	349.5	384.7
Total Delay (hr)	366.7	400.8	259.5	254.3	362.7	308.3	341.2
Total Stops	3923	4159	4311	4008	3583	4214	4386
Fuel Used (gal)	122.1	129.5	98.8	98.8	119.0	109.4	118.2

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1702	1750	1791	1737
Vehs Exited	1828	1820	1911	1843
Starting Vehs	698	742	682	686
Ending Vehs	572	672	562	572
Denied Entry Before	619	812	891	727
Denied Entry After	866	1053	1059	995
Travel Distance (mi)	1157	1134	1196	1149
Travel Time (hr)	329.7	400.2	400.2	371.2
Total Delay (hr)	288.1	359.2	357.1	329.8
Total Stops	4037	4343	4567	4151
Fuel Used (gal)	105.2	121.0	122.5	114.4

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1806	1788	1834	1914	1857	1826	1916
Vehs Exited	1812	1827	1809	1863	1923	1957	1985
Starting Vehs	502	639	590	474	606	603	599
Ending Vehs	496	600	615	525	540	472	530
Denied Entry Before	1212	1218	674	772	1154	916	1051
Denied Entry After	1363	1447	910	902	1280	1108	1193
Travel Distance (mi)	1162	1211	1178	1215	1243	1247	1246
Travel Time (hr)	438.2	481.1	345.3	338.4	457.3	379.8	414.6
Total Delay (hr)	396.4	437.6	302.8	294.6	412.7	334.9	369.8
Total Stops	3673	4168	4401	3796	4012	4106	4101
Fuel Used (gal)	130.1	141.0	109.3	109.0	136.6	119.0	126.8

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1856	1876	1725	1842
Vehs Exited	1962	1858	1771	1876
Starting Vehs	572	672	562	572
Ending Vehs	466	690	516	544
Denied Entry Before	866	1053	1059	995
Denied Entry After	1032	1225	1342	1178
Travel Distance (mi)	1202	1237	1126	1207
Travel Time (hr)	360.4	457.6	425.3	409.8
Total Delay (hr)	317.2	413.1	384.9	366.4
Total Stops	3776	4303	3586	3992
Fuel Used (gal)	113.7	136.8	126.7	124.9

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.1	0.4	0.3	0.0	0.0	0.0	1.6	4.5	1.0
Denied Del/Veh (s)	3.0	0.4	0.5	6.6	6.9	7.4	0.2	0.0	0.1	35.4	34.9	33.5
Total Delay (hr)	2.2	3.3	1.1	1.3	4.7	3.0	1.7	3.9	0.4	6.7	19.7	4.7
Total Del/Veh (s)	98.6	56.5	65.5	127.0	80.2	76.7	53.6	31.9	31.5	149.7	149.2	152.8
Stop Delay (hr)	2.1	3.0	1.0	1.3	4.2	2.8	1.5	2.9	0.3	5.8	16.9	4.0
Stop Del/Veh (s)	93.9	49.9	61.0	119.7	71.3	70.2	46.1	23.8	25.2	129.9	127.8	132.4
Travel Dist (mi)	20.8	56.3	16.0	8.6	47.8	32.3	23.0	85.4	9.6	58.0	170.7	39.9
Travel Time (hr)	3.0	5.3	1.7	1.7	6.7	4.5	2.5	6.8	0.8	10.2	30.0	7.1
Vehicles Entered	78	211	60	37	207	140	114	429	47	156	461	107
Vehicles Exited	74	208	59	37	207	140	113	432	48	150	449	104
Hourly Exit Rate	74	208	59	37	207	140	113	432	48	150	449	104
Input Volume	80	209	63	38	205	133	115	460	48	156	474	111
% of Volume	92	100	94	97	101	105	98	94	100	96	95	94
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	2	6	1

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	7.9
Denied Del/Veh (s)	13.9
Total Delay (hr)	52.7
Total Del/Veh (s)	91.0
Stop Delay (hr)	45.6
Stop Del/Veh (s)	78.8
Travel Dist (mi)	568.5
Travel Time (hr)	80.3
Vehicles Entered	2047
Vehicles Exited	2021
Hourly Exit Rate	2021
Input Volume	2092
% of Volume	97
Denied Entry Before	0
Denied Entry After	9

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.1	0.0	0.5
Denied Del/Veh (s)	1.4	0.0	3.1	0.6	0.1	1.0	0.0	1.0
Total Delay (hr)	2.4	0.0	1.4	6.9	0.4	13.6	2.9	27.6
Total Del/Veh (s)	77.1	2.5	16.2	59.0	3.1	107.1	103.6	52.0
Stop Delay (hr)	2.3	0.0	1.1	6.3	0.1	11.6	2.5	24.0
Stop Del/Veh (s)	73.0	1.1	12.4	54.4	1.0	91.8	90.9	45.3
Travel Dist (mi)	8.2	0.7	19.0	37.2	44.2	91.3	20.2	220.7
Travel Time (hr)	2.8	0.0	2.4	8.7	2.0	16.8	3.6	36.4
Vehicles Entered	112	16	311	414	490	448	99	1890
Vehicles Exited	112	16	311	414	490	438	97	1878
Hourly Exit Rate	112	16	311	414	490	438	97	1878
Input Volume	138	20	367	405	497	474	103	2004
% of Volume	81	79	85	102	99	93	94	94
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0
Denied Del/Veh (s)	0.2	0.1	0.1	0.9	0.7	0.3	0.5	1.1	2.1	1.3	0.5	0.1
Total Delay (hr)	1.0	0.7	0.5	2.0	1.9	1.3	6.7	14.3	1.9	5.1	9.9	1.0
Total Del/Veh (s)	56.8	86.2	48.0	53.5	42.6	15.9	85.6	93.9	62.9	91.6	72.0	43.6
Stop Delay (hr)	0.9	0.7	0.5	1.9	1.7	1.3	6.2	13.2	1.7	4.7	8.7	0.9
Stop Del/Veh (s)	53.9	80.9	45.5	49.9	38.7	15.5	80.2	87.1	58.1	84.7	63.5	38.7
Travel Dist (mi)	18.1	8.8	11.6	7.6	8.1	16.7	16.3	32.1	6.4	17.8	43.3	7.8
Travel Time (hr)	1.6	1.0	1.0	2.4	2.2	2.2	7.4	15.5	2.2	5.9	11.6	1.4
Vehicles Entered	60	30	39	135	157	297	274	534	104	198	488	85
Vehicles Exited	62	30	39	134	157	297	273	533	104	199	489	85
Hourly Exit Rate	62	30	39	134	157	297	273	533	104	199	489	85
Input Volume	62	29	41	136	161	288	284	537	105	222	544	95
% of Volume	100	103	96	99	98	103	96	99	99	90	90	89
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	1	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.5
Denied Del/Veh (s)	0.8
Total Delay (hr)	46.3
Total Del/Veh (s)	68.2
Stop Delay (hr)	42.6
Stop Del/Veh (s)	62.7
Travel Dist (mi)	194.5
Travel Time (hr)	54.5
Vehicles Entered	2401
Vehicles Exited	2402
Hourly Exit Rate	2402
Input Volume	2503
% of Volume	96
Denied Entry Before	0
Denied Entry After	1

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.9	2.6	0.0	0.0	0.0	0.0	3.7
Denied Del/Veh (s)	0.3	2.9	0.1	0.2	12.0	10.8	7.3	0.0	0.3	0.4	6.8
Total Delay (hr)	1.2	1.2	0.1	0.6	8.7	17.8	0.1	0.4	2.8	0.3	33.2
Total Del/Veh (s)	219.6	47.5	73.8	65.0	110.6	71.6	63.1	75.0	17.8	15.6	60.1
Stop Delay (hr)	1.1	1.1	0.1	0.6	6.7	11.4	0.1	0.4	2.2	0.2	24.1
Stop Del/Veh (s)	216.0	45.3	71.5	64.3	85.5	45.9	39.6	71.9	13.9	13.6	43.5
Travel Dist (mi)	5.5	25.9	1.1	6.6	122.3	391.2	3.2	0.7	20.0	2.0	578.3
Travel Time (hr)	1.4	2.2	0.2	0.9	13.9	33.6	0.3	0.4	3.6	0.4	56.6
Vehicles Entered	19	89	6	34	273	875	7	19	573	57	1952
Vehicles Exited	19	89	6	35	275	864	7	19	572	57	1943
Hourly Exit Rate	19	89	6	35	275	864	7	19	572	57	1943
Input Volume	20	92	7	33	283	860	6	21	626	62	2010
% of Volume	96	97	86	107	97	100	112	90	91	92	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	3	0	0	0	0	3

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.0	0.0	0.1	0.1	0.1
Total Delay (hr)	0.0	0.6	0.1	0.0	0.2	0.1	1.0
Total Del/Veh (s)	5.2	3.3	0.5	0.0	33.8	13.9	2.9
Stop Delay (hr)	0.0	0.2	0.0	0.0	0.2	0.1	0.5
Stop Del/Veh (s)	2.8	1.2	0.0	0.0	31.7	13.3	1.5
Travel Dist (mi)	0.3	51.2	17.7	0.1	3.9	3.3	76.5
Travel Time (hr)	0.0	2.4	0.7	0.0	0.4	0.2	3.7
Vehicles Entered	4	701	518	3	25	21	1272
Vehicles Exited	4	700	518	3	25	21	1271
Hourly Exit Rate	4	700	518	3	25	21	1271
Input Volume	5	862	516	3	26	22	1435
% of Volume	76	81	100	100	96	94	89
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: Ravenswood Ave & Pine St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.5	0.0	0.1	0.1	0.2
Total Delay (hr)	0.0	0.1	1.1	0.0	0.2	0.6	2.0
Total Del/Veh (s)	5.8	0.7	6.7	1.9	56.1	71.7	5.0
Stop Delay (hr)	0.0	0.0	0.8	0.0	0.2	0.6	1.5
Stop Del/Veh (s)	4.4	0.1	4.9	1.4	54.1	71.2	3.9
Travel Dist (mi)	0.0	15.4	11.8	0.0	1.8	4.8	33.9
Travel Time (hr)	0.0	0.7	1.6	0.0	0.2	0.7	3.2
Vehicles Entered	2	792	586	1	10	27	1418
Vehicles Exited	2	791	586	1	10	27	1417
Hourly Exit Rate	2	791	586	1	10	27	1417
Input Volume	3	978	588	1	10	27	1607
% of Volume	62	81	100	100	98	101	88
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	1.8	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	9.0	10.6	8.2	0.8	0.6	0.2	0.9	0.4	1.5	2.6	0.5	0.5
Total Delay (hr)	0.3	7.7	0.6	0.2	2.9	0.1	2.3	1.7	0.3	1.8	1.8	0.7
Total Del/Veh (s)	53.1	44.1	42.0	36.8	18.6	12.6	52.5	42.4	50.3	42.5	46.0	45.8
Stop Delay (hr)	0.2	6.1	0.5	0.1	2.4	0.1	2.2	1.5	0.3	1.6	1.6	0.6
Stop Del/Veh (s)	45.0	34.8	34.5	34.2	15.5	11.3	48.8	37.8	47.2	37.8	39.8	42.1
Travel Dist (mi)	1.3	48.1	4.2	0.5	18.5	1.1	22.4	18.9	3.4	42.3	39.1	14.9
Travel Time (hr)	0.3	11.1	0.9	0.2	3.6	0.2	3.3	2.4	0.5	3.4	3.1	1.2
Vehicles Entered	17	615	52	14	560	32	160	144	25	150	139	53
Vehicles Exited	16	622	52	15	562	33	157	143	24	150	139	54
Hourly Exit Rate	16	622	52	15	562	33	157	143	24	150	139	54
Input Volume	21	828	69	16	560	33	160	142	25	152	142	55
% of Volume	77	75	76	94	100	100	98	101	96	99	98	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	2.3
Denied Del/Veh (s)	4.2
Total Delay (hr)	20.5
Total Del/Veh (s)	37.0
Stop Delay (hr)	17.4
Stop Del/Veh (s)	31.3
Travel Dist (mi)	214.7
Travel Time (hr)	30.3
Vehicles Entered	1961
Vehicles Exited	1967
Hourly Exit Rate	1967
Input Volume	2202
% of Volume	89
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.2	0.4	0.3	0.0	0.9	2.0
Denied Del/Veh (s)	2.1	2.9	1.6	3.4	19.2	0.0	21.3	5.2
Total Delay (hr)	2.0	1.3	0.4	0.4	0.5	0.0	0.6	5.3
Total Del/Veh (s)	39.8	29.4	3.7	4.0	28.1	2.7	14.6	13.8
Stop Delay (hr)	1.9	1.2	0.1	0.2	0.5	0.0	0.6	4.5
Stop Del/Veh (s)	37.8	26.3	1.0	1.6	27.8	1.5	15.3	11.7
Travel Dist (mi)	11.0	9.8	45.4	45.7	1.1	0.4	2.7	116.1
Travel Time (hr)	2.7	1.9	2.1	2.7	0.9	0.0	1.7	12.0
Vehicles Entered	180	162	400	404	61	28	150	1385
Vehicles Exited	181	162	401	404	61	28	151	1388
Hourly Exit Rate	181	162	401	404	61	28	151	1388
Input Volume	192	170	400	400	63	26	148	1398
% of Volume	94	95	100	101	97	110	102	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	16.8	1.0	17.8
Total Del/Veh (s)	68.2	4.7	38.5
Stop Delay (hr)	16.6	0.9	17.4
Stop Del/Veh (s)	67.2	4.0	37.6
Travel Dist (mi)	66.1	14.8	80.9
Travel Time (hr)	19.9	1.6	21.5
Vehicles Entered	868	780	1648
Vehicles Exited	867	779	1646
Hourly Exit Rate	867	779	1646
Input Volume	1177	782	1960
% of Volume	74	100	84
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	12.6	63.3	14.6	0.0	0.0	0.0	10.2	76.7	51.1	92.4	344.1	6.6
Denied Del/Veh (s)	668.3	654.4	672.3	0.0	0.0	0.0	319.2	312.2	312.7	1192.7	1169.6	1182.6
Total Delay (hr)	4.0	20.9	4.0	9.6	4.2	0.4	2.6	17.7	33.8	26.9	4.0	0.1
Total Del/Veh (s)	275.4	283.0	256.6	68.4	65.0	19.4	92.5	81.0	226.6	671.4	30.9	26.1
Stop Delay (hr)	3.8	20.1	3.8	8.9	3.8	0.3	2.3	15.1	33.9	26.9	3.2	0.0
Stop Del/Veh (s)	266.1	272.0	247.3	63.4	59.6	17.1	81.3	69.1	227.1	673.5	25.1	20.8
Travel Dist (mi)	4.8	24.7	5.4	36.3	16.8	4.8	14.9	112.3	75.0	14.3	53.7	0.9
Travel Time (hr)	16.8	85.0	18.8	11.0	4.8	0.6	13.3	98.2	87.8	119.8	349.9	6.7
Vehicles Entered	47	248	54	489	227	64	99	748	502	121	448	8
Vehicles Exited	47	248	53	490	228	64	98	747	498	121	455	8
Hourly Exit Rate	47	248	53	490	228	64	98	747	498	121	455	8
Input Volume	64	327	70	500	222	61	108	877	597	252	953	18
% of Volume	73	76	76	98	103	105	91	85	83	48	48	45
Denied Entry Before	3	19	4	0	0	0	0	4	4	23	90	2
Denied Entry After	21	100	24	0	0	0	16	137	86	158	611	12

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	671.5
Denied Del/Veh (s)	572.9
Total Delay (hr)	127.9
Total Del/Veh (s)	143.4
Stop Delay (hr)	122.2
Stop Del/Veh (s)	137.0
Travel Dist (mi)	363.9
Travel Time (hr)	812.6
Vehicles Entered	3055
Vehicles Exited	3057
Hourly Exit Rate	3057
Input Volume	4049
% of Volume	76
Denied Entry Before	149
Denied Entry After	1165

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.6	0.3
Total Delay (hr)	0.7	2.1	2.8
Total Del/Veh (s)	4.1	35.3	12.2
Stop Delay (hr)	0.5	2.0	2.5
Stop Del/Veh (s)	3.1	33.6	11.0
Travel Dist (mi)	12.0	36.1	48.1
Travel Time (hr)	1.6	3.4	4.9
Vehicles Entered	616	214	830
Vehicles Exited	616	216	832
Hourly Exit Rate	616	216	832
Input Volume	624	211	834
% of Volume	99	102	100
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Delay (hr)	0.5	0.1	0.1	0.4	0.7	0.2	1.9
Total Del/Veh (s)	2.9	2.0	12.7	3.0	44.9	28.0	5.0
Stop Delay (hr)	0.1	0.0	0.1	0.2	0.6	0.2	1.1
Stop Del/Veh (s)	0.5	0.6	10.3	1.2	42.6	27.3	2.9
Travel Dist (mi)	40.3	8.5	1.4	39.3	4.4	1.8	95.7
Travel Time (hr)	1.9	0.5	0.1	1.8	0.8	0.2	5.3
Vehicles Entered	654	138	18	518	51	21	1400
Vehicles Exited	650	138	18	517	52	21	1396
Hourly Exit Rate	650	138	18	517	52	21	1396
Input Volume	811	157	19	518	52	23	1579
% of Volume	80	88	96	100	100	92	88
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.1	0.1	0.1
Total Delay (hr)	0.4	0.1	0.0	0.1	0.1	0.0	0.7
Total Del/Veh (s)	3.0	1.7	11.4	0.6	22.8	13.4	2.1
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.1	0.0	0.3
Stop Del/Veh (s)	0.6	0.6	9.7	0.0	20.8	13.2	0.7
Travel Dist (mi)	14.2	9.7	0.4	23.5	1.3	0.3	49.5
Travel Time (hr)	0.9	0.7	0.0	0.9	0.2	0.0	2.7
Vehicles Entered	441	296	8	502	16	4	1267
Vehicles Exited	441	296	9	502	16	4	1268
Hourly Exit Rate	441	296	9	502	16	4	1268
Input Volume	534	357	9	499	17	4	1421
% of Volume	83	83	97	101	93	100	89
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.0	0.0	1.2	3.1	0.1	0.1	0.6
Total Delay (hr)	0.4	0.0	4.6	0.1	0.0	0.5	5.7
Total Del/Veh (s)	2.0	0.8	21.9	18.1	2.9	39.2	11.9
Stop Delay (hr)	0.1	0.0	3.7	0.1	0.0	0.5	4.4
Stop Del/Veh (s)	0.5	0.0	17.6	14.7	2.7	38.9	9.3
Travel Dist (mi)	12.2	4.4	45.5	1.3	0.6	2.0	65.9
Travel Time (hr)	0.8	0.3	6.7	0.2	0.0	0.6	8.7
Vehicles Entered	634	232	758	21	14	48	1707
Vehicles Exited	634	233	757	21	14	47	1706
Hourly Exit Rate	634	233	757	21	14	47	1706
Input Volume	867	309	763	23	14	45	2022
% of Volume	73	75	99	92	98	104	84
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1	0.1
Total Del/Veh (s)	0.2	0.1	3.9	1.9	0.9
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	0.0	0.0	1.2	0.1	0.1
Travel Dist (mi)	20.6	0.6	0.5	30.0	51.7
Travel Time (hr)	0.7	0.0	0.0	1.2	1.9
Vehicles Entered	306	9	4	208	527
Vehicles Exited	306	9	4	208	527
Hourly Exit Rate	306	9	4	208	527
Input Volume	305	7	4	228	544
% of Volume	100	124	100	91	97
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.3	0.3		0.0	0.2
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	3.2	2.9	0.3	0.0		0.3	0.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.6	3.1	0.0	0.0		0.0	0.0
Travel Dist (mi)	0.0	0.1	9.2	0.0	0.0	13.5	22.8
Travel Time (hr)	0.0	0.0	0.4	0.0	0.0	0.5	0.8
Vehicles Entered	2	4	311	1	0	204	522
Vehicles Exited	2	4	311	1	0	204	522
Hourly Exit Rate	2	4	311	1	0	204	522
Input Volume	2	3	309	1	1	222	538
% of Volume	100	133	101	100	0	92	97
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

50: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	All
Denied Delay (hr)	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.1	0.0	0.5	0.3
Total Delay (hr)	0.5	0.0	1.2	1.8
Total Del/Veh (s)	2.4	1.7	7.1	4.4
Stop Delay (hr)	0.1	0.0	0.9	1.0
Stop Del/Veh (s)	0.2	0.6	5.5	2.5
Travel Dist (mi)	29.0	0.5	13.0	42.5
Travel Time (hr)	1.6	0.0	1.8	3.5
Vehicles Entered	795	14	618	1427
Vehicles Exited	796	14	619	1429
Hourly Exit Rate	796	14	619	1429
Input Volume	989	15	621	1625
% of Volume	81	92	100	88
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

51: Ravenswood Ave Performance by movement

Movement	EBT	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Delay (hr)	0.1	2.5	0.0	2.6
Total Del/Veh (s)	0.6	15.7	12.4	6.8
Stop Delay (hr)	0.0	1.8	0.0	1.9
Stop Del/Veh (s)	0.1	11.6	12.3	4.9
Travel Dist (mi)	18.1	36.4	0.6	55.1
Travel Time (hr)	0.8	3.7	0.1	4.6
Vehicles Entered	814	568	8	1390
Vehicles Exited	812	568	7	1387
Hourly Exit Rate	812	568	7	1387
Input Volume	990	568	8	1567
% of Volume	82	100	85	89
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

438: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.4	0.0	0.2	0.0	0.7
Total Del/Veh (s)	3.9	1.7	1.3	11.0	2.6
Stop Delay (hr)	0.3	0.0	0.0	0.0	0.3
Stop Del/Veh (s)	2.5	0.9	0.0	10.8	1.3
Travel Dist (mi)	19.0	0.3	39.1	1.2	59.6
Travel Time (hr)	1.1	0.0	1.9	0.1	3.1
Vehicles Entered	405	6	519	15	945
Vehicles Exited	406	6	519	15	946
Hourly Exit Rate	406	6	519	15	946
Input Volume	494	7	516	13	1030
% of Volume	82	83	101	113	92
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	689.1
Denied Del/Veh (s)	281.6
Total Delay (hr)	381.1
Total Del/Veh (s)	169.1
Stop Delay (hr)	332.2
Stop Del/Veh (s)	147.4
Travel Dist (mi)	4825.5
Travel Time (hr)	1243.9
Vehicles Entered	7632
Vehicles Exited	7567
Hourly Exit Rate	7567
Input Volume	45392
% of Volume	17
Denied Entry Before	149
Denied Entry After	1178

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	245	664	74	700	150	515	160	1763
Average Queue (ft)	89	231	36	341	97	265	110	987
95th Queue (ft)	203	572	81	837	175	475	200	2117
Link Distance (ft)		1416		1216		1022		1984
Upstream Blk Time (%)				5				15
Queuing Penalty (veh)				0				0
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	2	11	17	47	3	25	3	49
Queuing Penalty (veh)	5	9	56	18	17	29	18	77

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	335	170	432	199	1017
Average Queue (ft)	156	94	306	16	575
95th Queue (ft)	319	222	440	98	1138
Link Distance (ft)	334		419	419	1022
Upstream Blk Time (%)	4		3	0	9
Queuing Penalty (veh)	22		13	0	52
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	37	4			
Queuing Penalty (veh)	138	6			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	B46	SB
Directions Served	L	TR	LT	R	L	T	T	R	T	T	T	L
Maximum Queue (ft)	175	259	270	238	200	344	357	150	455	467	202	175
Average Queue (ft)	56	63	195	107	186	293	329	104	316	341	97	156
95th Queue (ft)	134	200	287	194	236	407	362	203	566	573	235	218
Link Distance (ft)	1572	1572	257	257		260	260		383	383	130	
Upstream Blk Time (%)			4	0		41	69		16	25	18	
Queuing Penalty (veh)			11	1		188	316		72	110	157	
Storage Bay Dist (ft)					175			100				125
Storage Blk Time (%)					37	31	73	2				19
Queuing Penalty (veh)					97	88	76	7				52

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	442	504
Average Queue (ft)	360	350
95th Queue (ft)	509	610
Link Distance (ft)	419	419
Upstream Blk Time (%)	14	16
Queuing Penalty (veh)	59	71
Storage Bay Dist (ft)		
Storage Blk Time (%)	47	
Queuing Penalty (veh)	104	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	EB	WB	NB	NB	NB	SB	SB	B46	B20
Directions Served	LT	R	LTR	L	T	R	L	TR	T	T
Maximum Queue (ft)	336	115	109	350	1858	96	100	215	443	106
Average Queue (ft)	67	48	34	279	861	5	24	167	166	8
95th Queue (ft)	277	103	88	416	2156	43	66	266	432	60
Link Distance (ft)	1538		998		2363			130	383	260
Upstream Blk Time (%)					6			27	4	0
Queuing Penalty (veh)					0			193	26	0
Storage Bay Dist (ft)		90		325		85	80			
Storage Blk Time (%)	11	2		4	33		0	30		
Queuing Penalty (veh)	13	0		35	93		1	6		

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	30	143	16	89
Average Queue (ft)	1	15	1	33
95th Queue (ft)	11	116	8	69
Link Distance (ft)		348	125	828
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		8		
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	2		
Queuing Penalty (veh)	0	0		

Intersection: 6: Ravenswood Ave & Pine St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	20	62	94	123
Average Queue (ft)	1	6	64	39
95th Queue (ft)	11	33	105	102
Link Distance (ft)		61	65	948
Upstream Blk Time (%)		1	25	
Queuing Penalty (veh)		6	140	
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	1		
Queuing Penalty (veh)	0	0		

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	95	470	270	6	90	148	120	428	134	353
Average Queue (ft)	19	386	80	0	16	135	96	154	103	155
95th Queue (ft)	66	550	233	6	57	164	141	353	160	289
Link Distance (ft)		344	239	239		133		719		1487
Upstream Blk Time (%)		26	2			35				
Queuing Penalty (veh)		235	9			209				
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	0	47			0	47	21	15	8	19
Queuing Penalty (veh)	0	10			0	8	33	27	17	29

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	272	174	131	101
Average Queue (ft)	159	25	31	64
95th Queue (ft)	299	175	94	102
Link Distance (ft)	257	597		64
Upstream Blk Time (%)	9	0		27
Queuing Penalty (veh)	35	0		59
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		0	1	
Queuing Penalty (veh)		2	4	

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	353	366	58	58
Average Queue (ft)	317	323	32	22
95th Queue (ft)	377	399	71	59
Link Distance (ft)	318	318	41	41
Upstream Blk Time (%)	25	31	25	14
Queuing Penalty (veh)	148	184	97	55
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	570	250	300	343	329	160	344	822	837	837	265	657
Average Queue (ft)	544	244	205	225	190	58	162	736	798	810	261	637
95th Queue (ft)	557	274	347	377	350	170	366	969	887	825	272	652
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	87		0	5	4			16	61	79		98
Queuing Penalty (veh)	0		0	21	17			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	83	36	2	10	29	0	0	20			98	2
Queuing Penalty (veh)	193	83	5	26	18	0	0	21			465	4

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	644
Average Queue (ft)	387
95th Queue (ft)	835
Link Distance (ft)	621
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	95	324
Average Queue (ft)	69	75
95th Queue (ft)	87	312
Link Distance (ft)	64	887
Upstream Blk Time (%)	8	1
Queuing Penalty (veh)	45	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	68	53	203	146
Average Queue (ft)	6	12	22	52
95th Queue (ft)	68	40	112	113
Link Distance (ft)	282		348	448
Upstream Blk Time (%)	1		0	
Queuing Penalty (veh)	5		0	
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		0	3	
Queuing Penalty (veh)		2	1	

Intersection: 36: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	64	32	50
Average Queue (ft)	8	6	16
95th Queue (ft)	58	26	45
Link Distance (ft)	125		428
Upstream Blk Time (%)	2		
Queuing Penalty (veh)	17		
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 38: Ravenswood Ave

Movement	EB	WB	B27	NB	SB
Directions Served	T	TR	T	R	R
Maximum Queue (ft)	54	350	356	32	104
Average Queue (ft)	5	244	137	9	37
95th Queue (ft)	28	466	379	31	81
Link Distance (ft)	41	239	344	222	220
Upstream Blk Time (%)	1	23	2		
Queuing Penalty (veh)	7	171	17		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: Laurel St

Movement	SB
Directions Served	LT
Maximum Queue (ft)	26
Average Queue (ft)	1
95th Queue (ft)	13
Link Distance (ft)	719
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 44: Laurel St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	29	3
Average Queue (ft)	5	0
95th Queue (ft)	23	3
Link Distance (ft)	90	297
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 50: Ravenswood Ave

Movement	EB	WB
Directions Served	TR	T
Maximum Queue (ft)	96	97
Average Queue (ft)	12	67
95th Queue (ft)	59	102
Link Distance (ft)	133	61
Upstream Blk Time (%)	1	30
Queuing Penalty (veh)	5	179
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 51: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	T	T	R
Maximum Queue (ft)	33	293	31
Average Queue (ft)	2	146	7
95th Queue (ft)	19	329	27
Link Distance (ft)	65	282	455
Upstream Blk Time (%)	1	4	
Queuing Penalty (veh)	5	23	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 438: Ravenswood Ave

Movement	EB	NB
Directions Served	TR	R
Maximum Queue (ft)	127	42
Average Queue (ft)	17	13
95th Queue (ft)	103	39
Link Distance (ft)	191	416
Upstream Blk Time (%)	2	
Queuing Penalty (veh)	12	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 4894

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	12.1	52.7	48.4	7.2	57.6	48.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	C-Max	Max	None
Avg. Green (s)	9.0	-11.9	-3.2	7.0	-11.6	-3.2	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	29	0	0	12	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	14	100	100	64	100	100	0
Cycles with Peds (%)	0	30	96	0	15	13	0

Controller Summary
Average Cycle Length (s): -6.5
Number of Complete Cycles : 24

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	1	2	3	6
Movement(s) Served	NBL	SBT	EBL	NBT
Maximum Green (s)	44.5	63.5	28.5	112.5
Minimum Green (s)	7.0	7.0	8.0	7.0
Recall	None	C-Max	Min	C-Max
Avg. Green (s)	9.9	-2.3	-13.6	-4.0
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	17	0
Cycles Maxed Out (%)	25	100	0	100
Cycles with Peds (%)	0	26	0	0

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Intersection: 3: Middlefield Road & Ringwood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	EBTL	SBL	NBT	WBTL
Maximum Green (s)	31.5	34.5	33.0	33.0	33.0	33.0
Minimum Green (s)	5.0	10.0	7.0	7.0	7.0	7.0
Recall	None	C-Max	None	Max	C-Max	None
Avg. Green (s)	-1.3	-3.9	-8.4	-5.4	0.2	3.2
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	4	0	0	0
Cycles @ Minimum (%)	0	0	13	0	0	0
Cycles Maxed Out (%)	100	100	30	100	100	67
Cycles with Peds (%)	0	96	35	0	95	29

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Intersection: 4: Middlefield Road & Seminary Dr

Phase	2	3	4	6	7	8
Movement(s) Served	EBTL	NBL	SBT	WBTL	SBL	NBT
Maximum Green (s)	22.0	26.9	56.1	22.0	5.0	78.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	C-Max	Min	None	C-Max
Avg. Green (s)	11.3	-0.1	-4.2	9.9	6.5	-9.5
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	11	0	0	39	0
Cycles @ Minimum (%)	24	0	0	54	4	0
Cycles Maxed Out (%)	24	7	100	17	9	100
Cycles with Peds (%)	0	0	13	0	0	39

Controller Summary
Average Cycle Length (s): -11.0
Number of Complete Cycles : 21

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	4.9	39.5	23.8	4.9	39.5	23.2
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Max	C-Max	None	Max	Max
Avg. Green (s)	6.0	5.8	3.3	4.9	5.7	2.7
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	89	0	0	86	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	11	100	100	14	100	100
Cycles with Peds (%)	0	42	9	0	19	22

Controller Summary

Average Cycle Length (s): -3.0
Number of Complete Cycles : 29

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	Max	Max	None	C-Max
Avg. Green (s)	-12.4	0.4	-4.3	0.7	-10.9	4.3
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	100	100	100	100	100
Cycles with Peds (%)	0	60	0	71	0	25

Controller Summary

Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:30	4:30	4:30	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	8258	8374	8211	8233	8325	8264	8341
Vehs Exited	8204	8401	8135	8243	8391	8230	8322
Starting Vehs	457	514	513	543	553	471	511
Ending Vehs	511	487	589	533	487	505	530
Denied Entry Before	4	1	4	2	6	2	4
Denied Entry After	130	162	183	146	175	132	186
Travel Distance (mi)	5315	5436	5262	5340	5416	5392	5384
Travel Time (hr)	567.1	620.1	715.1	615.8	658.9	630.1	660.9
Total Delay (hr)	377.5	425.8	526.4	425.0	465.2	437.6	468.1
Total Stops	15115	15574	15977	15618	16758	16572	16027
Fuel Used (gal)	266.6	281.6	300.5	277.9	290.8	282.9	290.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:30	4:30	4:30	4:30
End Time	6:00	6:00	6:00	6:00
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	8360	8412	8376	8314
Vehs Exited	8285	8352	8338	8292
Starting Vehs	477	482	547	498
Ending Vehs	552	542	585	526
Denied Entry Before	3	1	6	1
Denied Entry After	200	106	184	158
Travel Distance (mi)	5358	5429	5451	5378
Travel Time (hr)	678.3	658.9	658.0	646.3
Total Delay (hr)	487.1	464.7	462.9	454.0
Total Stops	16650	17828	17006	16316
Fuel Used (gal)	295.4	291.9	290.3	286.8

Interval #0 Information Seeding

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1950	2006	2014	1990	2002	1935	1978
Vehs Exited	2020	2032	1980	2023	2022	1919	1956
Starting Vehs	457	514	513	543	553	471	511
Ending Vehs	387	488	547	510	533	487	533
Denied Entry Before	4	1	4	2	6	2	4
Denied Entry After	0	8	34	4	39	1	10
Travel Distance (mi)	1274	1330	1268	1328	1329	1271	1291
Travel Time (hr)	109.0	129.0	132.5	126.8	142.5	113.8	129.3
Total Delay (hr)	63.6	81.6	87.1	79.5	95.0	68.5	82.9
Total Stops	3322	3999	3622	3840	4073	3287	3713
Fuel Used (gal)	57.6	64.3	63.1	63.0	67.0	58.8	62.8

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	2149	2041	2016	2003
Vehs Exited	2076	1991	2014	2002
Starting Vehs	477	482	547	498
Ending Vehs	550	532	549	503
Denied Entry Before	3	1	6	1
Denied Entry After	2	0	5	8
Travel Distance (mi)	1351	1305	1335	1308
Travel Time (hr)	130.7	127.9	133.9	127.5
Total Delay (hr)	82.7	81.3	86.1	80.8
Total Stops	3996	3983	3963	3781
Fuel Used (gal)	65.1	62.8	64.6	62.9

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2340	2353	2223	2268	2378	2426	2282
Vehs Exited	2064	2176	2115	2120	2222	2197	2186
Starting Vehs	387	488	547	510	533	487	533
Ending Vehs	663	665	655	658	689	716	629
Denied Entry Before	0	8	34	4	39	1	10
Denied Entry After	53	102	186	82	79	53	136
Travel Distance (mi)	1377	1426	1381	1418	1444	1445	1403
Travel Time (hr)	147.9	157.2	185.6	158.5	171.8	162.3	163.7
Total Delay (hr)	98.7	106.3	135.9	107.8	120.2	110.8	113.3
Total Stops	4235	4072	4301	4370	4701	4552	4221
Fuel Used (gal)	69.0	72.3	78.2	72.1	76.8	73.9	73.1

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2275	2351	2362	2326
Vehs Exited	2148	2110	2227	2156
Starting Vehs	550	532	549	503
Ending Vehs	677	773	684	673
Denied Entry Before	2	0	5	8
Denied Entry After	135	102	83	98
Travel Distance (mi)	1397	1399	1446	1413
Travel Time (hr)	163.7	175.2	161.1	164.7
Total Delay (hr)	113.8	125.0	109.4	114.1
Total Stops	4337	4941	4437	4413
Fuel Used (gal)	74.0	76.3	73.9	74.0

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	1957	1990	1907	1934	1984	1996	2078
Vehs Exited	2105	2144	2006	2072	2109	2113	2112
Starting Vehs	663	665	655	658	689	716	629
Ending Vehs	515	511	556	520	564	599	595
Denied Entry Before	53	102	186	82	79	53	136
Denied Entry After	89	143	257	133	128	91	156
Travel Distance (mi)	1353	1374	1278	1295	1333	1377	1364
Travel Time (hr)	157.6	173.7	195.6	167.1	174.5	187.3	183.9
Total Delay (hr)	109.4	124.5	149.8	120.7	126.9	138.1	135.1
Total Stops	3976	4099	3848	3931	4222	4760	4329
Fuel Used (gal)	71.3	75.2	78.2	71.7	74.4	78.7	77.4

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1962	1997	1964	1974
Vehs Exited	2076	2143	2038	2090
Starting Vehs	677	773	684	673
Ending Vehs	563	627	610	561
Denied Entry Before	135	102	83	98
Denied Entry After	189	82	133	139
Travel Distance (mi)	1325	1367	1335	1340
Travel Time (hr)	196.0	189.3	181.2	180.6
Total Delay (hr)	148.6	140.4	133.5	132.7
Total Stops	4366	4889	4486	4293
Fuel Used (gal)	79.6	79.4	75.9	76.2

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2011	2025	2067	2041	1961	1907	2003
Vehs Exited	2015	2049	2034	2028	2038	2001	2068
Starting Vehs	515	511	556	520	564	599	595
Ending Vehs	511	487	589	533	487	505	530
Denied Entry Before	89	143	257	133	128	91	156
Denied Entry After	130	162	183	146	175	132	186
Travel Distance (mi)	1311	1306	1335	1298	1311	1300	1327
Travel Time (hr)	152.6	160.2	201.4	163.4	170.1	166.6	184.0
Total Delay (hr)	105.8	113.5	153.6	117.1	123.3	120.2	136.8
Total Stops	3582	3404	4206	3477	3762	3973	3764
Fuel Used (gal)	68.7	69.8	80.9	71.0	72.6	71.5	76.8

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	1974	2023	2034	2003
Vehs Exited	1985	2108	2059	2038
Starting Vehs	563	627	610	561
Ending Vehs	552	542	585	526
Denied Entry Before	189	82	133	139
Denied Entry After	200	106	184	158
Travel Distance (mi)	1286	1357	1335	1317
Travel Time (hr)	187.8	166.7	181.8	173.5
Total Delay (hr)	141.9	118.1	133.9	126.4
Total Stops	3951	4015	4120	3824
Fuel Used (gal)	76.7	73.4	75.9	73.8

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Denied Del/Veh (s)	3.0	0.5	0.5	3.5	0.2	0.2	0.0	0.1	0.0	1.8	0.6	0.7
Total Delay (hr)	1.9	2.0	0.7	0.2	1.1	0.5	1.4	5.6	0.1	0.6	2.6	0.7
Total Del/Veh (s)	57.1	49.3	48.2	69.6	41.7	39.6	35.6	24.7	22.8	33.4	20.4	18.6
Stop Delay (hr)	1.8	1.8	0.7	0.2	1.0	0.5	1.0	3.1	0.1	0.5	1.6	0.5
Stop Del/Veh (s)	53.2	43.9	45.0	66.1	37.0	37.1	25.0	13.6	13.5	26.5	12.2	12.3
Travel Dist (mi)	32.0	38.4	14.9	2.4	20.7	10.4	27.1	159.5	3.4	24.5	170.5	52.3
Travel Time (hr)	3.2	3.3	1.3	0.3	1.8	0.9	2.4	11.1	0.2	1.5	8.4	2.6
Vehicles Entered	119	143	56	11	91	46	137	798	17	65	452	139
Vehicles Exited	118	142	55	11	92	46	136	803	16	65	455	140
Hourly Exit Rate	118	142	55	11	92	46	136	803	16	65	455	140
Input Volume	117	145	49	12	91	44	151	838	18	65	437	142
% of Volume	101	98	113	90	101	105	90	96	88	100	104	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Middlefield Road & Oak Grove Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	17.5
Total Del/Veh (s)	29.8
Stop Delay (hr)	12.5
Stop Del/Veh (s)	21.3
Travel Dist (mi)	556.1
Travel Time (hr)	37.0
Vehicles Entered	2074
Vehicles Exited	2079
Hourly Exit Rate	2079
Input Volume	2109
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

2: Middlefield Road & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Denied Del/Veh (s)	0.0		0.0	0.1	0.1	0.6	1.2	0.2
Total Delay (hr)	2.7	0.0	2.0	5.3	2.7	8.1	1.5	22.2
Total Del/Veh (s)	48.6		15.5	35.1	12.3	64.3	58.7	31.7
Stop Delay (hr)	2.4	0.0	1.3	4.3	1.1	6.5	1.3	16.8
Stop Del/Veh (s)	43.4		10.1	28.3	5.0	51.9	48.8	24.0
Travel Dist (mi)	14.0	0.0	27.2	52.2	75.6	86.6	17.9	273.5
Travel Time (hr)	3.3	0.0	3.0	7.6	5.4	11.1	2.2	32.6
Vehicles Entered	196	0	457	541	773	443	91	2501
Vehicles Exited	195	0	456	543	770	440	90	2494
Hourly Exit Rate	195	0	456	543	770	440	90	2494
Input Volume	197	0	461	575	823	422	89	2568
% of Volume	99	0	99	94	94	104	101	97
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	42.9	12.5	10.9	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	377.7	384.9	360.6	0.0	0.1	0.2	0.2	1.0	0.9	0.0	0.0	0.0
Total Delay (hr)	71.2	18.1	15.7	1.2	0.6	2.7	1.7	13.5	0.8	8.7	5.9	0.2
Total Del/Veh (s)	671.2	659.5	635.1	64.0	59.6	36.2	93.6	64.3	39.2	90.7	40.1	31.7
Stop Delay (hr)	70.2	17.8	15.4	1.1	0.5	2.5	1.6	12.2	0.7	7.9	4.9	0.2
Stop Del/Veh (s)	661.4	647.1	624.3	61.6	56.2	34.1	88.7	58.0	34.9	81.9	33.3	27.0
Travel Dist (mi)	92.8	25.2	22.9	3.7	1.9	15.5	3.8	45.0	4.6	32.2	50.4	2.4
Travel Time (hr)	117.4	31.5	27.4	1.3	0.6	3.5	1.8	15.2	1.1	10.1	7.9	0.3
Vehicles Entered	314	90	81	64	32	263	64	752	74	336	522	25
Vehicles Exited	300	74	71	64	32	264	62	751	75	336	522	25
Hourly Exit Rate	300	74	71	64	32	264	62	751	75	336	522	25
Input Volume	405	115	105	65	33	252	62	737	74	334	511	26
% of Volume	74	64	68	98	97	105	100	102	101	101	102	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	95	27	28	0	0	0	0	0	0	0	0	0

3: Middlefield Road & Ringwood Ave Performance by movement

Movement	All
Denied Delay (hr)	66.6
Denied Del/Veh (s)	86.6
Total Delay (hr)	140.3
Total Del/Veh (s)	185.0
Stop Delay (hr)	135.0
Stop Del/Veh (s)	178.1
Travel Dist (mi)	300.4
Travel Time (hr)	218.2
Vehicles Entered	2617
Vehicles Exited	2576
Hourly Exit Rate	2576
Input Volume	2720
% of Volume	95
Denied Entry Before	0
Denied Entry After	150

4: Middlefield Road & Seminary Dr Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.7
Denied Del/Veh (s)	0.9	2.6	0.1	0.1	1.3	0.7	1.5	0.1	1.4	0.9	1.3
Total Delay (hr)	2.9	5.1	0.1	0.1	1.8	11.5	0.1	0.8	4.4	0.1	26.8
Total Del/Veh (s)	72.8	46.4	35.5	20.7	96.3	56.9	43.2	83.7	24.6	22.0	46.9
Stop Delay (hr)	2.5	4.4	0.1	0.1	1.6	8.4	0.1	0.7	3.6	0.1	21.6
Stop Del/Veh (s)	64.6	39.9	33.9	20.4	85.1	41.6	30.8	80.3	20.3	19.7	37.8
Travel Dist (mi)	40.5	113.9	1.6	4.2	28.3	315.0	3.5	1.1	22.5	0.4	530.9
Travel Time (hr)	4.3	9.5	0.1	0.3	2.8	22.3	0.2	0.8	5.4	0.1	45.8
Vehicles Entered	138	388	9	22	64	702	8	32	636	11	2010
Vehicles Exited	138	387	9	22	62	714	8	32	638	11	2021
Hourly Exit Rate	138	387	9	22	62	714	8	32	638	11	2021
Input Volume	135	394	10	23	61	700	8	37	646	11	2024
% of Volume	102	98	90	97	102	102	97	86	99	102	100
Denied Entry Before	0	1	0	0	0	0	0	0	0	0	1
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Ravenswood Ave & Marcussen Dr Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.1	0.0	0.1	0.1	0.1
Total Delay (hr)	0.0	0.6	0.3	0.0	0.1	0.0	1.2
Total Del/Veh (s)	9.6	3.1	1.9	0.8	33.4	28.7	3.0
Stop Delay (hr)	0.0	0.3	0.2	0.0	0.1	0.0	0.6
Stop Del/Veh (s)	7.0	1.4	0.8	0.4	31.5	28.2	1.6
Travel Dist (mi)	0.4	53.1	22.7	0.3	2.5	0.9	79.8
Travel Time (hr)	0.0	2.4	1.1	0.0	0.2	0.1	3.9
Vehicles Entered	6	706	666	8	16	6	1408
Vehicles Exited	6	705	665	8	16	6	1406
Hourly Exit Rate	6	705	665	8	16	6	1406
Input Volume	7	706	698	7	16	5	1440
% of Volume	86	100	95	110	102	114	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: Ravenswood Ave & Pine St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Delay (hr)	0.0	0.1	1.2	0.0	0.2	0.9	2.4
Total Del/Veh (s)	16.7	0.7	6.1	3.3	108.1	153.6	5.9
Stop Delay (hr)	0.0	0.0	0.9	0.0	0.1	0.8	1.9
Stop Del/Veh (s)	15.7	0.0	4.5	2.9	106.3	152.9	4.7
Travel Dist (mi)	0.1	14.4	14.0	0.1	0.9	3.7	33.1
Travel Time (hr)	0.0	0.6	1.7	0.0	0.2	1.0	3.5
Vehicles Entered	4	713	716	5	5	20	1463
Vehicles Exited	4	712	716	5	5	20	1462
Hourly Exit Rate	4	712	716	5	5	20	1462
Input Volume	4	716	747	5	5	18	1495
% of Volume	100	99	96	100	105	110	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.0	0.0	0.1	0.2	1.1	2.9	1.9	3.1	0.3	0.4
Total Delay (hr)	1.6	5.3	0.5	0.2	2.8	0.2	5.8	4.4	1.6	1.4	3.2	0.6
Total Del/Veh (s)	69.1	29.6	25.1	34.0	15.2	14.6	105.1	97.6	103.7	78.6	82.3	82.7
Stop Delay (hr)	1.4	3.8	0.3	0.2	2.3	0.2	5.3	4.0	1.5	1.3	3.0	0.6
Stop Del/Veh (s)	62.2	21.4	18.7	31.8	12.5	13.7	96.4	88.5	96.6	74.0	75.9	78.7
Travel Dist (mi)	6.4	51.7	5.2	0.7	22.2	1.7	27.7	22.1	8.1	18.3	39.5	7.9
Travel Time (hr)	1.8	7.0	0.7	0.2	3.6	0.3	6.8	5.2	2.0	2.1	4.6	0.9
Vehicles Entered	79	636	64	20	665	52	188	154	55	63	135	27
Vehicles Exited	78	636	64	21	665	52	191	155	55	63	137	28
Hourly Exit Rate	78	636	64	21	665	52	191	155	55	63	137	28
Input Volume	80	640	64	22	689	57	191	152	57	58	140	24
% of Volume	98	99	100	97	97	91	100	102	96	109	98	115
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

7: Laurel St & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	27.6
Total Del/Veh (s)	45.6
Stop Delay (hr)	23.9
Stop Del/Veh (s)	39.6
Travel Dist (mi)	211.6
Travel Time (hr)	35.3
Vehicles Entered	2138
Vehicles Exited	2145
Hourly Exit Rate	2145
Input Volume	2174
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

8: Ringwood Ave & High school Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.1	0.4	3.5	0.0	0.0	0.0	0.4
Total Delay (hr)	0.1	0.4	0.1	0.0	0.2	0.0	0.1	0.9
Total Del/Veh (s)	5.0	3.2	1.5	0.5	14.7	5.9	6.3	3.2
Stop Delay (hr)	0.0	0.1	0.1	0.0	0.2	0.0	0.1	0.4
Stop Del/Veh (s)	2.1	0.6	0.6	0.1	13.7	5.0	6.5	1.5
Travel Dist (mi)	3.6	27.4	36.1	6.6	0.9	0.0	0.8	75.3
Travel Time (hr)	0.3	1.6	1.4	0.3	0.2	0.0	0.1	3.9
Vehicles Entered	58	445	314	58	44	1	41	961
Vehicles Exited	58	445	314	58	44	1	41	961
Hourly Exit Rate	58	445	314	58	44	1	41	961
Input Volume	62	480	308	54	43	2	39	986
% of Volume	94	93	102	107	102	67	106	97
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

19: Caltrain & Ravenswood Ave Performance by movement

Movement	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0
Total Delay (hr)	6.9	0.7	7.6
Total Del/Veh (s)	23.3	3.1	14.3
Stop Delay (hr)	6.5	0.6	7.0
Stop Del/Veh (s)	21.9	2.3	13.2
Travel Dist (mi)	81.0	16.1	97.0
Travel Time (hr)	10.7	1.4	12.1
Vehicles Entered	1054	852	1906
Vehicles Exited	1056	852	1908
Hourly Exit Rate	1056	852	1908
Input Volume	1062	872	1935
% of Volume	99	98	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.0	0.0	0.9	8.5	3.7	0.1	0.1	0.0
Denied Del/Veh (s)	2.2	2.9	4.4	0.0	0.0	0.0	23.9	22.1	22.7	2.5	0.3	0.4
Total Delay (hr)	1.3	7.5	1.9	9.7	4.7	0.6	4.0	25.9	8.4	4.2	9.8	0.4
Total Del/Veh (s)	87.5	91.2	76.9	65.9	66.2	27.1	110.2	65.7	50.3	85.6	33.6	29.9
Stop Delay (hr)	1.2	6.8	1.7	9.0	4.3	0.6	3.6	20.6	7.1	3.8	7.7	0.3
Stop Del/Veh (s)	80.7	83.1	70.9	60.9	60.5	24.6	98.5	52.2	42.7	78.3	26.4	25.4
Travel Dist (mi)	5.1	29.2	8.6	38.6	18.5	6.3	19.4	206.8	88.3	20.5	122.5	5.1
Travel Time (hr)	1.5	8.7	2.3	11.3	5.3	0.9	5.6	41.3	15.5	5.0	14.0	0.6
Vehicles Entered	51	292	86	520	248	84	129	1377	590	173	1026	43
Vehicles Exited	52	293	87	521	249	85	128	1374	588	173	1025	43
Hourly Exit Rate	52	293	87	521	249	85	128	1374	588	173	1025	43
Input Volume	48	292	86	528	260	85	132	1394	597	173	1021	44
% of Volume	108	100	101	99	96	100	97	99	98	100	100	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	1	4	2	0	0	0

23: El Camino Real & Ravenswood Ave Performance by movement

Movement	All
Denied Delay (hr)	13.7
Denied Del/Veh (s)	10.6
Total Delay (hr)	78.2
Total Del/Veh (s)	59.6
Stop Delay (hr)	66.6
Stop Del/Veh (s)	50.8
Travel Dist (mi)	568.9
Travel Time (hr)	112.2
Vehicles Entered	4619
Vehicles Exited	4618
Hourly Exit Rate	4618
Input Volume	4661
% of Volume	99
Denied Entry Before	0
Denied Entry After	7

33: High school Performance by movement

Movement	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.1
Total Delay (hr)	0.1	0.0	0.1
Total Del/Veh (s)	3.4	1.3	2.5
Stop Delay (hr)	0.1	0.0	0.1
Stop Del/Veh (s)	2.4	0.2	1.5
Travel Dist (mi)	2.5	14.4	16.9
Travel Time (hr)	0.3	0.5	0.8
Vehicles Entered	120	86	206
Vehicles Exited	120	85	205
Hourly Exit Rate	120	85	205
Input Volume	120	82	202
% of Volume	100	103	102
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

35: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.2	0.7
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	25.0	28.1	1.7
Total Delay (hr)	0.3	0.0	0.0	2.5	4.3	1.9	9.1
Total Del/Veh (s)	1.7	0.9	14.6	13.6	241.9	216.8	21.9
Stop Delay (hr)	0.1	0.0	0.0	1.7	4.3	1.9	8.0
Stop Del/Veh (s)	0.4	0.3	10.4	9.0	242.7	219.4	19.3
Travel Dist (mi)	42.4	2.7	0.5	50.5	5.1	2.6	103.8
Travel Time (hr)	1.8	0.1	0.0	4.3	4.9	2.2	13.3
Vehicles Entered	672	43	6	665	60	31	1477
Vehicles Exited	673	43	6	666	59	29	1476
Hourly Exit Rate	673	43	6	666	59	29	1476
Input Volume	675	40	7	696	59	29	1506
% of Volume	100	108	83	96	100	100	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	1

36: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.4	0.0	0.0	0.2	0.4	0.2	1.2
Total Del/Veh (s)	2.5	1.2	6.9	1.4	33.8	28.1	3.1
Stop Delay (hr)	0.2	0.0	0.0	0.1	0.3	0.2	0.8
Stop Del/Veh (s)	1.0	0.7	5.0	0.5	31.7	27.4	2.0
Travel Dist (mi)	22.1	2.3	0.1	30.8	3.1	1.7	60.1
Travel Time (hr)	1.2	0.1	0.0	1.3	0.5	0.2	3.4
Vehicles Entered	652	67	3	630	37	20	1409
Vehicles Exited	651	67	3	630	37	20	1408
Hourly Exit Rate	651	67	3	630	37	20	1408
Input Volume	654	67	3	662	39	20	1446
% of Volume	99	100	100	95	95	101	97
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

38: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	WBR	NBR	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.2	0.1	0.1
Total Delay (hr)	0.3	0.1	4.1	0.2	0.1	0.2	5.2
Total Del/Veh (s)	1.8	1.1	17.8	15.7	4.6	32.3	9.0
Stop Delay (hr)	0.1	0.0	3.2	0.2	0.1	0.2	3.9
Stop Del/Veh (s)	0.6	0.4	14.0	13.0	4.1	32.0	6.8
Travel Dist (mi)	12.6	7.3	51.3	3.3	4.2	1.1	79.7
Travel Time (hr)	0.8	0.6	6.2	0.4	0.4	0.3	8.7
Vehicles Entered	667	388	830	54	111	26	2076
Vehicles Exited	667	387	831	53	111	25	2074
Hourly Exit Rate	667	387	831	53	111	25	2074
Input Volume	673	389	852	54	108	25	2101
% of Volume	99	99	98	99	103	101	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

42: Laurel St Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.0	0.1	0.4
Total Del/Veh (s)	2.1	1.1	5.7	2.3	2.2
Stop Delay (hr)	0.2	0.0	0.0	0.0	0.2
Stop Del/Veh (s)	1.5	1.0	2.2	0.2	1.1
Travel Dist (mi)	26.2	1.4	1.7	31.1	60.4
Travel Time (hr)	1.1	0.1	0.1	1.3	2.5
Vehicles Entered	391	21	11	214	637
Vehicles Exited	391	21	11	214	637
Hourly Exit Rate	391	21	11	214	637
Input Volume	393	20	12	217	642
% of Volume	99	106	90	99	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

44: Laurel St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.1	0.3	0.2	0.0	0.0	0.2
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)		3.7	0.5	0.0	7.0	0.4	0.5
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)		3.8	0.1	0.0	4.1	0.0	0.1
Travel Dist (mi)	0.0	0.0	11.1	0.0	0.1	14.1	25.3
Travel Time (hr)	0.0	0.0	0.5	0.0	0.0	0.5	1.0
Vehicles Entered	0	2	410	2	1	210	625
Vehicles Exited	0	2	410	2	1	210	625
Hourly Exit Rate	0	2	410	2	1	210	625
Input Volume	1	2	411	2	2	212	630
% of Volume	0	100	100	100	50	99	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

50: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.5	0.0	1.4	1.9
Total Del/Veh (s)	2.3	1.2	6.8	4.5
Stop Delay (hr)	0.0	0.0	1.1	1.1
Stop Del/Veh (s)	0.1	0.0	5.4	2.7
Travel Dist (mi)	26.7	1.7	16.5	44.9
Travel Time (hr)	1.4	0.1	2.0	3.5
Vehicles Entered	706	45	737	1488
Vehicles Exited	708	45	736	1489
Hourly Exit Rate	708	45	736	1489
Input Volume	710	43	766	1520
% of Volume	100	104	96	98
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

51: Ravenswood Ave Performance by movement

Movement	EBT	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Delay (hr)	0.1	5.6	0.0	5.7
Total Del/Veh (s)	0.4	27.7	5.7	14.1
Stop Delay (hr)	0.0	4.0	0.0	4.0
Stop Del/Veh (s)	0.0	20.0	5.7	10.0
Travel Dist (mi)	15.3	47.1	0.4	62.7
Travel Time (hr)	0.6	7.2	0.0	7.8
Vehicles Entered	718	722	4	1444
Vehicles Exited	718	721	4	1443
Hourly Exit Rate	718	721	4	1443
Input Volume	720	752	4	1476
% of Volume	100	96	100	98
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

438: Ravenswood Ave Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Delay (hr)	0.9	0.0	0.3	0.0	1.3
Total Del/Veh (s)	5.3	2.1	1.5	24.0	3.4
Stop Delay (hr)	0.6	0.0	0.0	0.0	0.6
Stop Del/Veh (s)	3.1	1.2	0.2	23.8	1.7
Travel Dist (mi)	31.6	0.7	46.9	0.5	79.8
Travel Time (hr)	2.0	0.0	2.3	0.1	4.4
Vehicles Entered	646	15	638	6	1305
Vehicles Exited	647	15	636	6	1304
Hourly Exit Rate	647	15	636	6	1304
Input Volume	651	14	670	7	1342
% of Volume	99	105	95	83	97
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Delay (hr)	82.7
Denied Del/Veh (s)	35.1
Total Delay (hr)	371.4
Total Del/Veh (s)	151.6
Stop Delay (hr)	316.0
Stop Del/Veh (s)	129.0
Travel Dist (mi)	5378.2
Travel Time (hr)	646.3
Vehicles Entered	8314
Vehicles Exited	8292
Hourly Exit Rate	8292
Input Volume	46002
% of Volume	18
Denied Entry Before	1
Denied Entry After	158

Intersection: 1: Middlefield Road & Oak Grove Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	226	270	58	198	149	790	151	473
Average Queue (ft)	99	143	12	96	84	362	58	227
95th Queue (ft)	181	234	42	170	164	719	143	407
Link Distance (ft)		1415		1195		997		1984
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	230		50		125		135	
Storage Blk Time (%)	0	1	2	38	1	21	0	17
Queuing Penalty (veh)	0	1	3	5	11	31	1	12

Intersection: 2: Middlefield Road & Ravenswood Ave

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	332	170	465	462	764
Average Queue (ft)	206	117	292	212	389
95th Queue (ft)	378	242	457	443	720
Link Distance (ft)	320		444	444	997
Upstream Blk Time (%)	7		2	1	0
Queuing Penalty (veh)	46		12	6	0
Storage Bay Dist (ft)		70			
Storage Blk Time (%)	37	3			
Queuing Penalty (veh)	171	6			

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	B20	B20	B46	SB
Directions Served	L	TR	LT	R	L	T	T	R	T	T	T	L
Maximum Queue (ft)	1658	1658	184	268	200	342	354	150	382	397	98	175
Average Queue (ft)	1612	1580	89	151	94	277	318	73	119	173	10	169
95th Queue (ft)	1725	1879	159	259	210	391	386	188	349	400	70	187
Link Distance (ft)	1615	1615	257	257		260	260		380	380	132	
Upstream Blk Time (%)	78	75		2		29	50		0	3	1	
Queuing Penalty (veh)	0	0		4		122	212		2	11	8	
Storage Bay Dist (ft)					175			100				125
Storage Blk Time (%)					1	43	60					54
Queuing Penalty (veh)					2	26	44					138

Intersection: 3: Middlefield Road & Ringwood Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	452	524
Average Queue (ft)	328	320
95th Queue (ft)	461	598
Link Distance (ft)	444	444
Upstream Blk Time (%)	2	8
Queuing Penalty (veh)	9	36
Storage Bay Dist (ft)		
Storage Blk Time (%)	15	
Queuing Penalty (veh)	50	

Intersection: 4: Middlefield Road & Seminary Dr

Movement	EB	EB	WB	NB	NB	NB	SB	SB	B46	B20	B20
Directions Served	LT	R	LTR	L	T	R	L	TR	T	T	
Maximum Queue (ft)	657	115	56	350	929	86	104	226	474	300	267
Average Queue (ft)	288	110	17	114	511	5	38	197	265	83	39
95th Queue (ft)	651	131	44	311	929	42	91	245	533	250	173
Link Distance (ft)	1549		992		2349			132	380	260	260
Upstream Blk Time (%)								41	11	1	1
Queuing Penalty (veh)								282	78	5	2
Storage Bay Dist (ft)		90		325		85	80				
Storage Blk Time (%)	20	32			47		2	46			
Queuing Penalty (veh)	82	45			33		11	17			

Intersection: 5: Ravenswood Ave & Marcussen Dr

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	34	179	119	61
Average Queue (ft)	3	21	18	20
95th Queue (ft)	21	136	87	52
Link Distance (ft)		348	126	828
Upstream Blk Time (%)		1	2	
Queuing Penalty (veh)		5	11	
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	3		
Queuing Penalty (veh)	0	0		

Intersection: 6: Ravenswood Ave & Pine St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	33	46	75	121
Average Queue (ft)	2	4	60	41
95th Queue (ft)	16	27	89	110
Link Distance (ft)		64	58	992
Upstream Blk Time (%)		0	35	
Queuing Penalty (veh)		2	264	
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	1	0		

Intersection: 7: Laurel St & Ravenswood Ave

Movement	EB	EB	B27	B27	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	T		L	TR	L	TR	L	TR
Maximum Queue (ft)	109	457	280	250	80	144	120	704	134	375
Average Queue (ft)	65	343	87	45	19	136	100	396	76	200
95th Queue (ft)	119	551	251	181	58	155	151	705	156	350
Link Distance (ft)		343	239	239		133		723		1541
Upstream Blk Time (%)		16	3	1		39		3		
Queuing Penalty (veh)		130	12	6		300		11		
Storage Bay Dist (ft)	85				70		95		110	
Storage Blk Time (%)	8	31			0	46	36	44	3	36
Queuing Penalty (veh)	57	25			3	10	73	84	5	21

Intersection: 8: Ringwood Ave & High school

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	218	119	20	73
Average Queue (ft)	41	8	1	36
95th Queue (ft)	139	71	17	63
Link Distance (ft)	257	605		65
Upstream Blk Time (%)	0			1
Queuing Penalty (veh)	0			1
Storage Bay Dist (ft)			135	
Storage Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	

Intersection: 19: Caltrain & Ravenswood Ave

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	321	341	58	54
Average Queue (ft)	149	183	23	21
95th Queue (ft)	333	375	64	60
Link Distance (ft)	318	318	38	38
Upstream Blk Time (%)	0	2	13	11
Queuing Penalty (veh)	2	13	59	46
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	L	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	493	249	300	339	330	160	345	819	794	775	265	553
Average Queue (ft)	273	195	214	236	220	73	225	619	585	412	202	349
95th Queue (ft)	483	283	321	350	354	184	419	895	882	880	318	504
Link Distance (ft)	527			318	318			792	792	792		621
Upstream Blk Time (%)	3		0	3	5			10	12	12		0
Queuing Penalty (veh)	0		0	12	21			0	0	0		0
Storage Bay Dist (ft)		225	275			135	320				240	
Storage Blk Time (%)	18	12	1	7	29	0	1	37			6	19
Queuing Penalty (veh)	42	24	4	17	25	0	6	48			30	33

Intersection: 23: El Camino Real & Ravenswood Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	486
Average Queue (ft)	302
95th Queue (ft)	439
Link Distance (ft)	621
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: High school

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	67	19
Average Queue (ft)	35	1
95th Queue (ft)	54	13
Link Distance (ft)	65	887
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Ravenswood Ave

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	68	38	350	388
Average Queue (ft)	6	4	148	180
95th Queue (ft)	67	21	373	435
Link Distance (ft)	288		348	455
Upstream Blk Time (%)	0		3	10
Queuing Penalty (veh)	1		22	0
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		0	19	
Queuing Penalty (veh)		0	1	

Intersection: 36: Ravenswood Ave

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	111	32	131	108
Average Queue (ft)	16	2	12	40
95th Queue (ft)	84	14	81	87
Link Distance (ft)	126		204	440
Upstream Blk Time (%)	3		0	
Queuing Penalty (veh)	18		2	
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		0	2	
Queuing Penalty (veh)		0	0	

Intersection: 38: Ravenswood Ave

Movement	EB	EB	WB	B27	NB	SB
Directions Served	T	TR	TR	T	R	R
Maximum Queue (ft)	52	44	375	330	81	67
Average Queue (ft)	5	3	238	110	34	22
95th Queue (ft)	29	23	476	303	59	53
Link Distance (ft)	38	38	239	343	194	233
Upstream Blk Time (%)	2	1	23	1		
Queuing Penalty (veh)	9	4	206	6		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 42: Laurel St

Movement	NB	SB
Directions Served	TR	LT
Maximum Queue (ft)	100	74
Average Queue (ft)	11	6
95th Queue (ft)	84	41
Link Distance (ft)	297	723
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Laurel St

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	29	19	24
Average Queue (ft)	2	1	1
95th Queue (ft)	15	21	14
Link Distance (ft)	85	141	297
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 50: Ravenswood Ave

Movement	EB	WB
Directions Served	TR	T
Maximum Queue (ft)	54	77
Average Queue (ft)	4	68
95th Queue (ft)	37	95
Link Distance (ft)	133	64
Upstream Blk Time (%)	0	37
Queuing Penalty (veh)	1	283
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 51: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	T	T	R
Maximum Queue (ft)	14	299	30
Average Queue (ft)	1	259	4
95th Queue (ft)	12	366	20
Link Distance (ft)	58	288	463
Upstream Blk Time (%)	0	17	
Queuing Penalty (veh)	1	126	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 438: Ravenswood Ave

Movement	EB	WB	NB
Directions Served	TR	T	R
Maximum Queue (ft)	194	67	35
Average Queue (ft)	43	3	6
95th Queue (ft)	170	39	26
Link Distance (ft)	204	320	438
Upstream Blk Time (%)	3		
Queuing Penalty (veh)	22		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 3630

Intersection: 1: Middlefield Road & Oak Grove Avenue

Phase	1	2	4	5	6	8	9
Movement(s) Served	SBL	NBTL	EBTL	NBL	SBTL	WBTL	Ped
Maximum Green (s)	5.5	78.3	29.4	9.8	74.0	29.4	1.0
Minimum Green (s)	5.0	33.0	29.0	5.0	33.0	29.0	1.0
Recall	None	C-Max	Max	None	C-Max	Max	None
Avg. Green (s)	5.5	9.0	7.2	7.7	5.9	7.2	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	0.00
Cycles Skipped (%)	46	0	0	29	0	0	100
Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles Maxed Out (%)	46	100	100	17	100	100	0
Cycles with Peds (%)	0	38	96	0	12	8	0

Controller Summary
Average Cycle Length (s): -12.5
Number of Complete Cycles : 23

Intersection: 2: Middlefield Road & Ravenswood Ave

Phase	1	2	3	6
Movement(s) Served	NBL	SBT	EBL	NBT
Maximum Green (s)	33.1	26.4	22.0	64.0
Minimum Green (s)	7.0	7.0	8.0	7.0
Recall	None	C-Max	Min	C-Max
Avg. Green (s)	-2.6	-2.4	-3.0	-3.5
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	3	0	0	0
Cycles @ Minimum (%)	0	0	19	0
Cycles Maxed Out (%)	49	100	16	100
Cycles with Peds (%)	0	11	0	0

Controller Summary
Average Cycle Length (s): -1.4
Number of Complete Cycles : 34

Intersection: 3: Middlefield Road & Ringwood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	12.5	66.8	59.7	37.6	41.7	33.0
Minimum Green (s)	5.0	10.0	7.0	7.0	7.0	7.0
Recall	None	C-Max	None	Ped	None	None
Avg. Green (s)	12.6	-16.8	-7.3	6.0	-11.5	-1.6
g/C Ratio	0.77	-1.10	-0.48	0.34	-0.75	-0.10
Cycles Skipped (%)	6	0	0	14	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	75	100	0	10	82	100
Cycles with Peds (%)	0	100	18	86	35	39

Controller Summary
Average Cycle Length (s): 15.2
Number of Complete Cycles : 15

Intersection: 4: Middlefield Road & Seminary Dr

Phase	2	3	4	6	7	8
Movement(s) Served	EBTL	NBL	SBT	WBTL	SBL	NBT
Maximum Green (s)	22.0	5.3	47.7	22.0	5.0	48.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0
Recall	Max	None	C-Max	Max	None	C-Max
Avg. Green (s)	0.9	5.3	5.3	0.2	5.0	7.3
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	10	0	0	28	0
Cycles @ Minimum (%)	0	0	0	0	72	0
Cycles Maxed Out (%)	100	87	100	100	72	100
Cycles with Peds (%)	0	0	10	7	0	23

Controller Summary
Average Cycle Length (s): -6.4
Number of Complete Cycles : 27

Intersection: 7: Laurel St & Ravenswood Ave

Phase	1	2	4	5	6	8
Movement(s) Served	WBL	EBTL	NBTL	EBL	WBTL	SBTL
Maximum Green (s)	5.1	93.5	36.4	9.3	89.3	26.4
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Min	C-Max	None	Min	Max
Avg. Green (s)	5.9	18.8	7.3	7.5	12.0	-6.4
g/C Ratio	0.05	1.16	0.45	0.31	0.74	-0.39
Cycles Skipped (%)	88	0	0	33	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	13	69	100	22	69	100
Cycles with Peds (%)	0	63	53	0	56	50

Controller Summary
Average Cycle Length (s): 16.2
Number of Complete Cycles : 16

Intersection: 23: El Camino Real & Ravenswood Ave

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBT	EBTL	WBTL	SBL	NBT
Maximum Green (s)	14.9	65.9	23.0	28.0	21.9	58.9
Minimum Green (s)	8.0	10.0	7.0	4.0	8.0	10.0
Recall	Max	C-Max	None	None	None	C-Max
Avg. Green (s)	-11.2	0.4	-5.2	0.4	-13.1	5.8
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	16	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	100	71	92	24	100
Cycles with Peds (%)	0	55	0	71	0	23

Controller Summary
Average Cycle Length (s): -13.8
Number of Complete Cycles : 20

Appendix C
Level of Service Analysis

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_AM_2023.11.22.vistro
Report File: P:\...\EAM.pdf

Scenario 16 Existing AM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Right	0.754	20.6	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	SWB Left	0.596	22.5	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	SB Left	0.583	30.2	C
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.464	15.3	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.685	30.4	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NWB Left	0.500	28.5	C
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	0.009	38.3	E
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NWB Left	0.855	15.5	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	SB Left	0.684	18.1	B
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	EB Right	0.706	15.3	B
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	0.774	18.7	B
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Left	0.842	25.2	C
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	EB Right	1.283	170.8	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	SWB Right	1.068	52.0	D
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.727	26.7	C
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.657	13.7	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.569	14.6	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NWB Right	0.582	50.5	D
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	NWB Left	0.520	40.5	D
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.626	18.9	B
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	12.175	52.7	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	NWB Left	0.626	32.9	C
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.564	33.7	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	SWB Right	0.407	5.8	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.625	39.9	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.379	4.3	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.566	15.7	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.393	5.1	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.485	9.7	A
39	Santa Cruz Ave/Sand Hill Rd	Signalized	HCM 7th Edition	NWB Left	0.711	46.4	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	WB Left	0.845	29.6	D
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Thru	0.610	15.3	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	SB Left	0.718	35.9	D
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 7th Edition	NWB Left	0.646	15.9	B
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	NWB Right	0.681	18.1	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Right	0.897	10.1	B
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWBL2	0.780	14.1	B

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.372	9.9	A
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NEB Thru	0.005	0.0	A
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NEB Thru	0.005	0.0	A
254	Glenwood Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.747	22.8	C
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.643	14.9	B
292	Ravenswood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	NWB Left	0.031	27.7	D
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.329	8.9	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	NWB Thru	0.003	0.0	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.322	8.7	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	743	1324	217	938	464
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	743	1324	217	938	464
Peak Hour Factor	1.0000	0.9550	0.9550	1.0000	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	195	347	54	246	121
Total Analysis Volume [veh/h]	0	778	1386	217	982	486
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	60	60	0	35	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	55	55	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	55	53	30	30
g / C, Green / Cycle	0.61	0.59	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.19	0.39	0.28	0.31
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2447	2096	1170	538
d1, Uniform Delay [s]	8.43	12.49	27.56	28.42
k, delay calibration	0.50	0.50	0.04	0.30
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	1.66	0.64	14.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.66	0.84	0.90
d, Delay for Lane Group [s/veh]	8.77	14.15	28.20	42.83
Lane Group LOS	A	B	C	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.30	8.62	9.48	11.73
50th-Percentile Queue Length [ft/ln]	82.47	215.56	237.11	293.19
95th-Percentile Queue Length [veh/ln]	5.94	13.44	14.53	17.34
95th-Percentile Queue Length [ft/ln]	148.44	335.95	363.37	433.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	8.77	14.15	0.00	28.20	42.83
Movement LOS		A	B		C	D
d_A, Approach Delay [s/veh]	8.77		14.15		33.04	
Approach LOS	A		B		C	
d_I, Intersection Delay [s/veh]	20.63					
Intersection LOS	C					
Intersection V/C	0.754					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.48	0.00	32.11
l_p,int, Pedestrian LOS Score for Intersectio	2.886	0.000	2.485
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	1119	686
d_b, Bicycle Delay [s]	8.74	8.73	19.43
l_b,int, Bicycle LOS Score for Intersection	2.201	2.703	1.560
Bicycle LOS	B	B	A

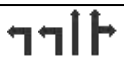
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	31	1057	2	274	1202	333	12	0	56	190	4	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	1057	2	274	1202	333	12	0	56	190	4	2
Peak Hour Factor	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	266	1	69	303	84	3	0	14	48	1	1
Total Analysis Volume [veh/h]	31	1064	2	276	1210	335	12	0	56	191	4	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			2		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	60	60	20	65	65	0	40	0	40	40	40
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	85	85	14	79	79	0	16	0	20	20	20
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	5	93	93	10	100	100	10	10	13	13
g / C, Green / Cycle	0.04	0.69	0.69	0.07	0.74	0.74	0.07	0.07	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.02	0.20	0.20	0.08	0.42	0.44	0.01	0.02	0.06	0.06
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1736	1781	2736	1781	1780
c, Capacity [veh/h]	66	2437	1279	257	1377	1278	126	194	172	172
d1, Uniform Delay [s]	63.74	8.38	8.38	62.56	8.07	8.41	58.73	59.52	58.41	58.41
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.74	0.30	0.57	40.25	1.69	2.08	0.24	0.60	2.23	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.29	0.29	1.07	0.57	0.60	0.10	0.29	0.57	0.57
d, Delay for Lane Group [s/veh]	67.48	8.67	8.94	102.82	9.76	10.49	58.97	60.13	60.64	60.65
Lane Group LOS	E	A	A	F	A	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.11	3.88	4.17	5.82	9.67	9.97	0.40	0.94	3.37	3.37
50th-Percentile Queue Length [ft/ln]	27.77	97.06	104.25	145.61	241.70	249.37	9.94	23.42	84.17	84.14
95th-Percentile Queue Length [veh/ln]	2.00	6.99	7.51	10.01	14.77	15.15	0.72	1.69	6.06	6.06
95th-Percentile Queue Length [ft/ln]	49.99	174.71	187.65	250.33	369.18	378.86	17.90	42.16	151.51	151.46

Movement, Approach, & Intersection Results

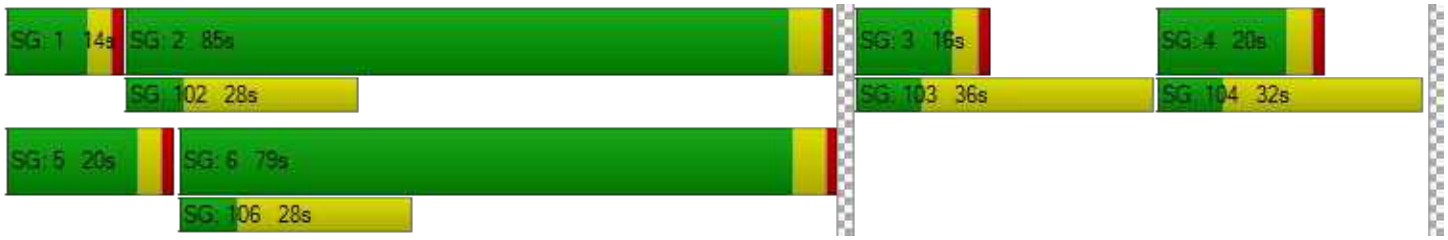
d_M, Delay for Movement [s/veh]	67.48	8.76	8.94	102.82	10.02	10.49	58.97	58.97	60.13	60.64	60.65	60.65
Movement LOS	E	A	A	F	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.42			24.17			59.92			60.64		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	22.46											
Intersection LOS	C											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.07	56.07	56.99	56.99
l_p,int, Pedestrian LOS Score for Intersectio	2.990	3.122	2.376	2.112
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1096	175	234
d_b, Bicycle Delay [s]	11.23	13.81	56.28	52.67
l_b,int, Bicycle LOS Score for Intersection	2.163	3.062	1.672	1.885
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.583

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	111	643	58	26	847	396	430	19	152	19	13	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	643	58	26	847	396	430	19	152	19	13	21
Peak Hour Factor	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	163	15	7	215	100	109	5	39	5	3	5
Total Analysis Volume [veh/h]	112	651	59	26	858	401	436	19	154	19	13	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	20	80	80	18	72	72	35	35	35	0	35	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	58	58	15	58	58	37	45	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	106	106	5	98	98	25	25	25	11	11
g / C, Green / Cycle	0.08	0.69	0.69	0.03	0.63	0.63	0.16	0.16	0.16	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.19	0.01	0.35	0.36	0.13	0.13	0.10	0.01	0.02
s, saturation flow rate [veh/h]	1781	1870	1808	1781	1870	1671	1781	1788	1552	1781	1672
c, Capacity [veh/h]	150	1280	1238	56	1182	1056	287	288	250	127	119
d1, Uniform Delay [s]	69.44	9.57	9.58	73.79	16.25	16.35	62.58	62.58	60.46	67.59	68.26
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.80	0.55	0.57	2.16	1.92	2.20	3.69	3.67	1.84	0.40	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.28	0.28	0.46	0.56	0.57	0.79	0.79	0.62	0.15	0.28
d, Delay for Lane Group [s/veh]	72.24	10.12	10.16	75.96	18.17	18.55	66.27	66.25	62.30	67.99	69.21
Lane Group LOS	E	B	B	E	B	B	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.46	4.86	4.73	1.05	13.63	12.48	9.01	9.04	5.84	0.73	1.33
50th-Percentile Queue Length [ft/ln]	111.51	121.44	118.32	26.31	340.87	311.92	225.25	226.05	145.96	18.28	33.20
95th-Percentile Queue Length [veh/ln]	7.92	8.47	8.30	1.89	19.69	18.27	13.93	13.97	9.80	1.32	2.39
95th-Percentile Queue Length [ft/ln]	198.10	211.81	207.51	47.36	492.27	456.74	348.32	349.34	245.03	32.91	59.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.24	10.14	10.16	75.96	18.26	18.55	66.26	66.25	62.30	67.99	69.21	69.21
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	18.60			19.52			65.26			68.77		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	30.25											
Intersection LOS	C											
Intersection V/C	0.583											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.92	66.92	66.92	66.92
l_p,int, Pedestrian LOS Score for Intersectio	2.830	2.932	2.387	2.009
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	529	423
d_b, Bicycle Delay [s]	33.36	33.32	42.08	48.20
l_b,int, Bicycle LOS Score for Intersection	2.238	2.620	2.564	1.647
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.464

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	581	72	173	812	62	82	39	1	45	19	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	581	72	173	812	62	82	39	1	45	19	155
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	153	19	46	214	16	22	10	0	12	5	41
Total Analysis Volume [veh/h]	0	614	76	183	857	65	87	41	1	48	20	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	56	34	56	22	56	34	34	34	34	0	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	50	50	13	66	66	20	20
g / C, Green / Cycle	0.55	0.55	0.14	0.73	0.73	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.10	0.25	0.25	0.12	0.14
s, saturation flow rate [veh/h]	1870	1624	1781	1870	1817	1106	1633
c, Capacity [veh/h]	1067	892	259	1361	1322	312	409
d1, Uniform Delay [s]	11.40	11.42	36.68	4.45	4.46	31.04	31.75
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.88	1.14	3.54	0.69	0.71	1.87	2.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.36	0.71	0.34	0.34	0.41	0.57
d, Delay for Lane Group [s/veh]	12.28	12.56	40.22	5.14	5.17	32.92	34.37
Lane Group LOS	B	B	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.99	3.56	3.98	2.56	2.51	2.65	4.76
50th-Percentile Queue Length [ft/ln]	99.82	88.99	99.56	63.94	62.67	66.33	119.12
95th-Percentile Queue Length [veh/ln]	7.19	6.41	7.17	4.60	4.51	4.78	8.34
95th-Percentile Queue Length [ft/ln]	179.67	160.19	179.22	115.09	112.81	119.39	208.61

Movement, Approach, & Intersection Results

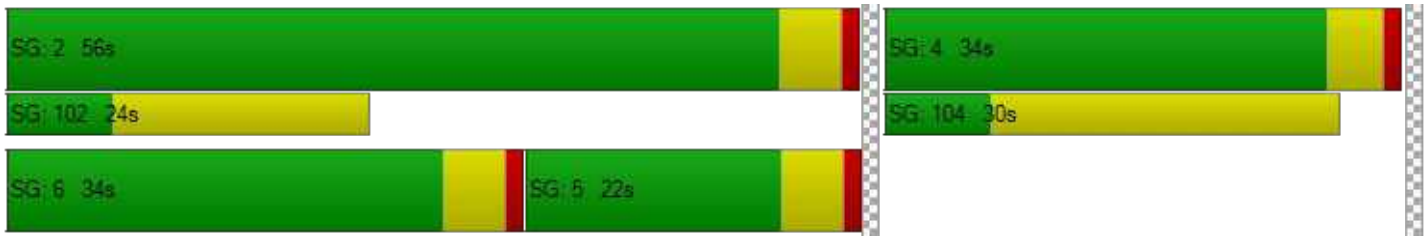
d_M, Delay for Movement [s/veh]	12.28	12.39	12.56	40.22	5.15	5.17	32.92	32.92	32.92	34.37	34.37	34.37
Movement LOS	B	B	B	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	12.41			10.96			32.92			34.37		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.26											
Intersection LOS	B											
Intersection V/C	0.464											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	28.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.70	34.70	34.70	20.76
l_p,int, Pedestrian LOS Score for Intersectio	2.653	2.871	1.801	1.953
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	1131	651	651
d_b, Bicycle Delay [s]	20.77	8.52	20.52	20.51
l_b,int, Bicycle LOS Score for Intersection	2.129	2.471	1.772	1.942
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	95	356	393	415	328	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	356	393	415	328	83
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	96	106	112	88	22
Total Analysis Volume [veh/h]	102	383	423	446	353	89
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing m	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	33	44	44	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	48	48	93	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	5	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	Yes	No	No	No	Yes	
Pedestrian Recall	No	No	No	Yes	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.60
g_i, Effective Green Time [s]	35	73	36	91	50
g / C, Green / Cycle	0.27	0.56	0.28	0.70	0.39
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.24	0.24	0.25
s, saturation flow rate [veh/h]	1781	1574	1781	1870	1781
c, Capacity [veh/h]	479	854	495	1311	688
d1, Uniform Delay [s]	36.85	17.86	44.43	7.64	32.55
k, delay calibration	0.50	0.50	0.27	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	1.70	10.04	0.71	4.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.45	0.85	0.34	0.64
d, Delay for Lane Group [s/veh]	37.86	19.56	54.48	8.35	37.11
Lane Group LOS	D	B	D	A	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	7.27	14.12	4.76	12.07
50th-Percentile Queue Length [ft/ln]	66.97	181.75	353.06	119.10	301.70
95th-Percentile Queue Length [veh/ln]	4.82	11.69	20.29	8.34	17.77
95th-Percentile Queue Length [ft/ln]	120.55	292.30	507.14	208.59	444.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.86	19.56	54.48	8.35	37.11	37.11
Movement LOS	D	B	D	A	D	D
d_A, Approach Delay [s/veh]	23.41		30.80		37.11	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	30.36					
Intersection LOS	C					
Intersection V/C	0.685					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	56.33	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.282	2.606	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	1361	623
d_b, Bicycle Delay [s]	36.98	6.76	31.40
l_b,int, Bicycle LOS Score for Intersection	1.560	2.993	2.289
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	10	10	2	125	22	293	29	522	118	180	426	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	10	2	125	22	293	29	522	118	180	426	43
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	1	34	6	80	8	143	32	49	117	12
Total Analysis Volume [veh/h]	11	11	2	137	24	322	32	574	130	198	468	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing m	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	62	25	62	57	25	57	28	62	25	22	57	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	55	38	55	83	38	83	9	55	38	37	83	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	2.5	2.6	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.50	4.60	4.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.50	2.60	2.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	32	32	32	32	4	71	71	18	86	86
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.03	0.55	0.55	0.14	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.12	0.21	0.02	0.16	0.09	0.11	0.14	0.14
s, saturation flow rate [veh/h]	1028	1813	1343	1517	1781	3560	1428	1781	1870	1789
c, Capacity [veh/h]	172	441	378	369	50	1956	785	251	1242	1189
d1, Uniform Delay [s]	51.64	37.47	43.79	46.65	62.54	15.72	14.36	53.94	8.52	8.54
k, delay calibration	0.10	0.10	0.10	0.14	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.03	0.73	8.08	13.24	0.38	0.46	5.46	0.39	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.03	0.43	0.87	0.65	0.29	0.17	0.79	0.21	0.21
d, Delay for Lane Group [s/veh]	51.78	37.49	44.51	54.73	75.78	16.11	14.82	59.39	8.90	8.95
Lane Group LOS	D	D	D	D	E	B	B	E	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.34	0.33	4.62	10.69	1.23	4.61	1.96	6.60	2.86	2.79
50th-Percentile Queue Length [ft/ln]	8.40	8.22	115.46	267.33	30.64	115.16	49.06	164.91	71.62	69.82
95th-Percentile Queue Length [veh/ln]	0.60	0.59	8.14	16.06	2.21	8.13	3.53	10.81	5.16	5.03
95th-Percentile Queue Length [ft/ln]	15.11	14.80	203.57	401.40	55.14	203.16	88.31	270.21	128.91	125.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.78	37.49	37.49	44.51	44.51	54.73	75.78	16.11	14.82	59.39	8.92	8.95
Movement LOS	D	D	D	D	D	D	E	B	B	E	A	A
d_A, Approach Delay [s/veh]	44.04			51.33			18.47			22.94		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	28.53											
Intersection LOS	C											
Intersection V/C	0.500											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.45	54.45	54.45	54.45
l_p,int, Pedestrian LOS Score for Intersectio	1.985	2.225	2.920	2.702
Crosswalk LOS	A	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	777	1208
d_b, Bicycle Delay [s]	35.95	36.22	24.48	10.39
l_b,int, Bicycle LOS Score for Intersection	1.599	2.357	2.167	2.148
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	38.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	1	0	5	7	0	33	15	595	6	21	558	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	5	7	0	33	15	595	6	21	558	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	2	0	9	4	165	2	6	155	3
Total Analysis Volume [veh/h]	1	0	6	8	0	37	17	661	7	23	620	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.07	0.00	0.08	0.02	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	38.31	31.07	12.68	37.67	32.82	14.83	8.85	0.00	0.00	9.01	0.00	0.00
Movement LOS	E	D	B	E	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.51	0.51	0.51	0.05	0.00	0.00	0.08	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.65	1.65	1.65	12.83	12.83	12.83	1.36	0.00	0.00	1.92	0.00	0.00
d_A, Approach Delay [s/veh]	16.34			18.89			0.22			0.32		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	0.95											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.855

Intersection Setup

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	978	81	1026	3279	148	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	978	81	1026	3279	148	388
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	265	22	278	887	40	105
Total Analysis Volume [veh/h]	1058	88	1110	3549	160	420
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	113.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	60	144	84	144	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	5
Pedestrian Clearance [s]	35	13	0	13	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	27	27	36	67	11	51
g / C, Green / Cycle	0.31	0.31	0.41	0.76	0.13	0.58
(v / s)_i Volume / Saturation Flow Rate	0.21	0.06	0.32	0.70	0.05	0.10
s, saturation flow rate [veh/h]	5094	1570	3459	5094	3459	4220
c, Capacity [veh/h]	1586	489	1414	3878	434	2303
d1, Uniform Delay [s]	26.18	21.96	22.51	8.21	35.07	10.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	0.17	0.99	1.05	0.52	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.18	0.79	0.92	0.37	0.18
d, Delay for Lane Group [s/veh]	26.67	22.13	23.50	9.27	35.59	10.06
Lane Group LOS	C	C	C	A	D	B
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.72	1.21	8.64	7.30	1.55	1.24
50th-Percentile Queue Length [ft/ln]	143.06	30.16	215.94	182.61	38.77	30.97
95th-Percentile Queue Length [veh/ln]	9.65	2.17	13.46	11.74	2.79	2.23
95th-Percentile Queue Length [ft/ln]	241.14	54.28	336.44	293.42	69.78	55.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.67	22.13	23.50	9.27	35.59	10.06
Movement LOS	C	C	C	A	D	B
d_A, Approach Delay [s/veh]	26.32		12.66		17.10	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	15.51					
Intersection LOS	B					
Intersection V/C	0.855					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.15	0.00	35.15
l_p,int, Pedestrian LOS Score for Intersectio	3.834	0.000	2.883
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	3161	664
d_b, Bicycle Delay [s]	7.57	14.74	19.50
l_b,int, Bicycle LOS Score for Intersection	2.190	4.122	1.670
Bicycle LOS	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	86	144	407	10	25	27	60	712	113	798	2109	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	144	407	10	25	27	60	712	113	798	2109	41
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	38	108	3	7	7	16	190	30	213	562	11
Total Analysis Volume [veh/h]	92	154	434	11	27	29	64	759	120	851	2248	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing m	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	149	50	25	50	149
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	11	15	38	1	6	6	59	35	35	59	50	50
g / C, Green / Cycle	0.12	0.16	0.42	0.01	0.06	0.06	0.65	0.39	0.39	0.65	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.07	0.10	0.01	0.01	0.02	0.14	0.15	0.08	0.47	0.44	0.03
s, saturation flow rate [veh/h]	797	2249	4220	937	3560	1552	453	5094	1589	1815	5094	1589
c, Capacity [veh/h]	99	372	1794	13	224	98	297	1974	616	1188	2823	881
d1, Uniform Delay [s]	39.09	33.76	16.63	44.45	39.94	40.37	12.95	19.90	18.32	9.69	16.06	9.23
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.96	0.74	0.07	84.66	0.24	1.68	0.36	0.12	0.15	0.82	0.54	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.41	0.24	0.87	0.12	0.30	0.22	0.38	0.19	0.72	0.80	0.05
d, Delay for Lane Group [s/veh]	66.05	34.50	16.70	129.11	40.18	42.05	13.31	20.02	18.47	10.51	16.60	9.25
Lane Group LOS	E	C	B	F	D	D	B	C	B	B	B	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.68	1.49	1.80	0.54	0.29	0.67	0.21	3.72	1.64	3.72	11.24	0.38
50th-Percentile Queue Length [ft/ln]	66.97	37.29	44.99	13.62	7.34	16.68	5.28	93.01	41.02	93.08	281.08	9.51
95th-Percentile Queue Length [veh/ln]	4.82	2.69	3.24	0.98	0.53	1.20	0.38	6.70	2.95	6.70	16.74	0.68
95th-Percentile Queue Length [ft/ln]	120.55	67.13	80.99	24.52	13.22	30.03	9.51	167.42	73.83	167.54	418.56	17.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.05	34.50	16.70	129.11	40.18	42.05	13.31	20.02	18.47	10.51	16.60	9.25
Movement LOS	E	C	B	F	D	D	B	C	B	B	B	A
d_A, Approach Delay [s/veh]	27.40			55.59			19.37			14.85		
Approach LOS	C			E			B			B		
d_I, Intersection Delay [s/veh]	18.06											
Intersection LOS	B											
Intersection V/C	0.684											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.54	0.00	36.54	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.550	0.000	3.156	0.000
Crosswalk LOS	D	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	834	685	3304	2018
d_b, Bicycle Delay [s]	15.33	19.49	19.17	0.00
l_b,int, Bicycle LOS Score for Intersection	2.121	1.615	2.078	3.288
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	116	608	11	16	784	18	59	2	72	10	6	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	608	11	16	784	18	59	2	72	10	6	12
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	156	3	4	201	5	15	1	18	3	2	3
Total Analysis Volume [veh/h]	119	623	11	16	803	18	60	2	74	10	6	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing m	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	7	49	49	7	49	49	34	34	34	34	34	34
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	65	61	61	65	58	58	18	18
g / C, Green / Cycle	0.72	0.67	0.67	0.72	0.64	0.64	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.18	0.38	0.38	0.02	0.42	0.42	0.16	0.03
s, saturation flow rate [veh/h]	677	837	830	799	984	973	825	896
c, Capacity [veh/h]	404	563	559	505	633	626	221	210
d1, Uniform Delay [s]	8.19	7.75	7.76	5.69	9.82	9.85	34.83	29.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.85	4.07	4.11	0.12	5.13	5.24	1.05	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.56	0.57	0.03	0.65	0.65	0.62	0.13
d, Delay for Lane Group [s/veh]	10.04	11.81	11.87	5.81	14.95	15.10	35.87	29.91
Lane Group LOS	B	B	B	A	B	B	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.71	3.11	3.10	0.08	5.17	5.16	2.90	0.51
50th-Percentile Queue Length [ft/ln]	17.81	77.74	77.51	2.06	129.21	128.94	72.46	12.87
95th-Percentile Queue Length [veh/ln]	1.28	5.60	5.58	0.15	8.90	8.88	5.22	0.93
95th-Percentile Queue Length [ft/ln]	32.06	139.92	139.52	3.71	222.42	222.06	130.44	23.16

Movement, Approach, & Intersection Results

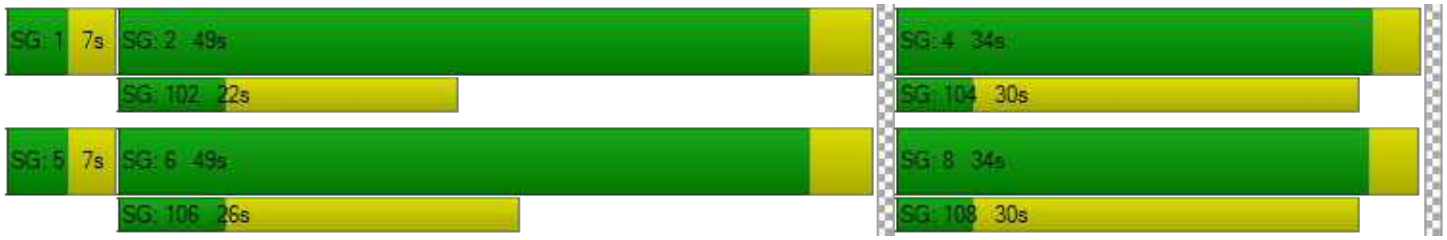
d_M, Delay for Movement [s/veh]	10.04	11.84	11.87	5.81	15.02	15.10	35.87	35.87	35.87	29.91	29.91	29.91
Movement LOS	B	B	B	A	B	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	11.56			14.85			35.87			29.91		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	15.31											
Intersection LOS	B											
Intersection V/C	0.706											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.40	36.40	34.62	34.62
l_p,int, Pedestrian LOS Score for Intersectio	2.849	2.789	1.940	1.753
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1001	1001	685	690
d_b, Bicycle Delay [s]	11.29	11.43	19.47	19.40
l_b,int, Bicycle LOS Score for Intersection	2.181	2.250	1.784	1.606
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.774

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	34	674	919	14	16	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	674	919	14	16	83
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	174	238	4	4	21
Total Analysis Volume [veh/h]	35	697	950	14	17	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing m	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	130	130	130	30	30
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	130	114	114	30	30
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	7	133	123	123	20	20
g / C, Green / Cycle	0.05	0.83	0.77	0.77	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.44	0.58	0.58	0.01	0.11
s, saturation flow rate [veh/h]	797	1593	837	832	1704	803
c, Capacity [veh/h]	36	1325	642	639	212	100
d1, Uniform Delay [s]	76.36	4.02	10.18	10.26	62.07	68.57
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.09
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.83	1.50	7.87	8.08	0.06	16.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.53	0.75	0.75	0.08	0.86
d, Delay for Lane Group [s/veh]	111.19	5.51	18.05	18.34	62.13	84.59
Lane Group LOS	F	A	B	B	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.78	2.82	9.31	9.40	0.62	3.91
50th-Percentile Queue Length [ft/ln]	44.58	70.62	232.68	235.03	15.58	97.67
95th-Percentile Queue Length [veh/ln]	3.21	5.08	14.31	14.43	1.12	7.03
95th-Percentile Queue Length [ft/ln]	80.24	127.12	357.76	360.74	28.04	175.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	111.19	5.51	18.19	18.34	62.13	84.59
Movement LOS	F	A	B	B	E	F
d_A, Approach Delay [s/veh]	10.57		18.20		80.88	
Approach LOS	B		B		F	
d_I, Intersection Delay [s/veh]	18.68					
Intersection LOS	B					
Intersection V/C	0.774					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.31	71.31	69.44
l_p,int, Pedestrian LOS Score for Intersectio	2.788	2.705	2.017
Crosswalk LOS	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1574	1374	337
d_b, Bicycle Delay [s]	3.65	7.85	55.36
l_b,int, Bicycle LOS Score for Intersection	2.164	2.355	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	733	279	48	1011	331	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	733	279	48	1011	331	49
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	193	73	13	266	87	13
Total Analysis Volume [veh/h]	771	293	50	1063	348	52
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	135	135	21	135	30	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	115	115	15	130	30	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	122	122	6	130	23	23
g / C, Green / Cycle	0.76	0.76	0.04	0.81	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.48	0.19	0.03	0.67	0.13	0.13
s, saturation flow rate [veh/h]	1593	1519	1781	1593	1406	1732
c, Capacity [veh/h]	1208	1152	66	1297	198	244
d1, Uniform Delay [s]	9.08	5.74	76.47	8.34	67.75	67.76
k, delay calibration	0.50	0.50	0.04	0.50	0.18	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.59	0.53	6.52	5.89	20.83	17.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.25	0.76	0.82	0.90	0.90
d, Delay for Lane Group [s/veh]	11.67	6.27	82.99	14.23	88.59	85.65
Lane Group LOS	B	A	F	B	F	F
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.95	2.82	2.15	8.92	8.40	10.16
50th-Percentile Queue Length [ft/ln]	148.70	70.53	53.81	223.08	210.10	254.00
95th-Percentile Queue Length [veh/ln]	9.95	5.08	3.87	13.82	13.16	15.39
95th-Percentile Queue Length [ft/ln]	248.69	126.95	96.85	345.56	328.96	384.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.67	6.27	82.99	14.23	87.18	85.65
Movement LOS	B	A	F	B	F	F
d_A, Approach Delay [s/veh]	10.18		17.32		86.96	
Approach LOS	B		B		F	
d_I, Intersection Delay [s/veh]	25.18					
Intersection LOS	C					
Intersection V/C	0.842					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.209
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1386	1574	335
d_b, Bicycle Delay [s]	7.59	3.64	55.54
l_b,int, Bicycle LOS Score for Intersection	2.437	2.478	2.220
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	170.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.283

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	175	908	217	66	1303	20	22	126	343	344	92	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	908	217	66	1303	20	22	126	343	344	92	33
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	246	59	18	353	5	6	34	93	93	25	9
Total Analysis Volume [veh/h]	190	985	235	72	1413	22	24	137	372	373	100	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	25	80	80	25	80	80	35	35	35	0	35	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	24	77	77	25	78	78	25	25	25	0	33	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	20	20	20	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	72	72	8	61	61	25	25	25	40	40	40
g / C, Green / Cycle	0.12	0.45	0.45	0.05	0.38	0.38	0.16	0.16	0.16	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.11	0.23	0.24	0.04	0.59	0.59	0.02	0.09	0.25	0.24	0.12	0.05
s, saturation flow rate [veh/h]	1781	3560	1662	1781	1593	829	1528	1604	1515	1547	837	675
c, Capacity [veh/h]	210	1600	747	90	608	316	238	250	236	388	210	169
d1, Uniform Delay [s]	69.69	31.61	31.78	75.18	49.46	49.46	57.91	62.33	66.95	59.18	51.01	47.31
k, delay calibration	0.18	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.41	1.20	2.65	6.10	256.13	264.15	0.07	0.70	278.38	6.69	0.62	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.52	0.53	0.80	1.55	1.55	0.10	0.55	1.58	0.96	0.48	0.21
d, Delay for Lane Group [s/veh]	90.11	32.80	34.42	81.29	305.59	313.61	57.98	63.02	345.33	65.87	51.64	47.54
Lane Group LOS	F	C	C	F	F	F	E	E	F	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.82	11.64	11.42	3.12	33.83	35.91	0.85	5.24	27.87	7.84	3.49	1.16
50th-Percentile Queue Length [ft/ln]	220.48	291.11	285.48	77.99	845.84	897.85	21.23	130.96	696.68	195.88	87.27	29.10
95th-Percentile Queue Length [veh/ln]	13.69	17.24	16.96	5.62	54.49	57.57	1.53	8.99	43.49	12.43	6.28	2.10
95th-Percentile Queue Length [ft/ln]	342.24	431.01	424.03	140.38	1362.22	1439.22	38.22	224.80	1087.25	310.64	157.09	52.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.11	33.06	34.42	81.29	308.25	313.61	57.98	63.02	345.33	65.87	51.64	47.54
Movement LOS	F	C	C	F	F	F	E	E	F	E	D	D
d_A, Approach Delay [s/veh]	40.98			297.49			259.83			61.78		
Approach LOS	D			F			F			E		
d_I, Intersection Delay [s/veh]	170.76											
Intersection LOS	F											
Intersection V/C	1.283											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	69.38	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.285	2.919	2.364	2.514
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	912	262	375
d_b, Bicycle Delay [s]	24.22	23.67	60.53	53.19
l_b,int, Bicycle LOS Score for Intersection	2.335	2.388	2.439	2.399
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	52.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.068

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	84	1070	964	643	272	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	1070	964	643	272	56
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	282	254	170	72	15
Total Analysis Volume [veh/h]	89	1129	1017	678	287	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		2		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	12	60	48	48	20	20
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	7	46	36	36	27	27
g / C, Green / Cycle	0.08	0.56	0.43	0.43	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.07	0.43	0.36	0.55	0.31	0.04
s, saturation flow rate [veh/h]	1312	2623	2792	1228	937	1569
c, Capacity [veh/h]	106	1458	1208	531	307	514
d1, Uniform Delay [s]	37.69	14.41	21.06	23.22	27.10	19.53
k, delay calibration	0.04	0.15	0.15	0.50	0.19	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	1.29	2.36	138.44	19.48	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.77	0.84	1.28	0.93	0.11
d, Delay for Lane Group [s/veh]	44.13	15.70	23.42	161.66	46.58	19.56
Lane Group LOS	D	B	C	F	D	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.94	7.55	8.36	29.60	6.89	0.78
50th-Percentile Queue Length [ft/ln]	48.51	188.86	209.12	740.08	172.25	19.49
95th-Percentile Queue Length [veh/ln]	3.49	12.06	13.11	44.97	11.19	1.40
95th-Percentile Queue Length [ft/ln]	87.32	301.55	327.70	1124.30	279.87	35.08

Movement, Approach, & Intersection Results

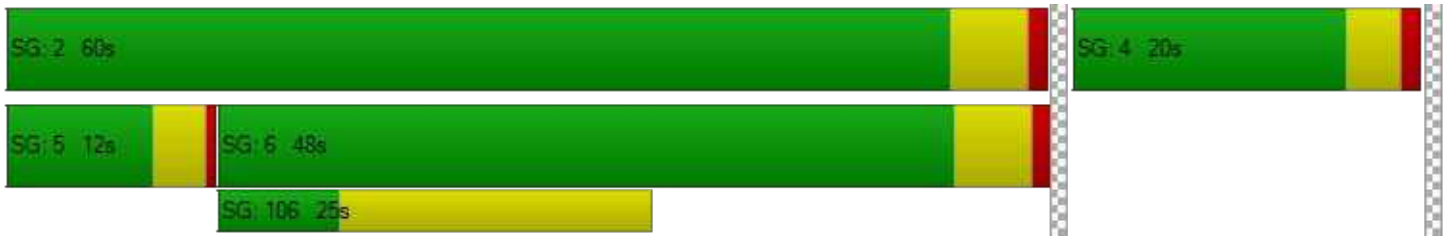
d_M, Delay for Movement [s/veh]	44.13	15.70	23.42	161.66	46.58	19.56
Movement LOS	D	B	C	F	D	B
d_A, Approach Delay [s/veh]	17.78		78.72		41.97	
Approach LOS	B		E		D	
d_I, Intersection Delay [s/veh]	52.04					
Intersection LOS	D					
Intersection V/C	1.068					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.26
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.297
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1312	1023	380
d_b, Bicycle Delay [s]	4.94	9.91	27.25
l_b,int, Bicycle LOS Score for Intersection	2.564	2.958	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	18	769	8	36	766	46	39	2	15	78	6	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	769	8	36	766	46	39	2	15	78	6	66
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	199	2	9	198	12	10	1	4	20	2	17
Total Analysis Volume [veh/h]	19	795	8	37	792	48	40	2	16	81	6	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	99	99	99	99	99	99	99	99	99	99
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	57	57	4	59	8	8	8	12	12
g / C, Green / Cycle	0.02	0.58	0.58	0.04	0.60	0.08	0.08	0.08	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.04	0.55	0.02	0.02	0.01	0.09	0.06
s, saturation flow rate [veh/h]	937	1422	1863	937	1527	937	1360	1345	937	1185
c, Capacity [veh/h]	15	822	1076	36	915	78	113	112	112	141
d1, Uniform Delay [s]	48.62	11.66	11.67	47.55	17.64	42.35	42.34	41.99	41.98	40.91
k, delay calibration	0.11	0.23	0.23	0.11	0.25	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	179.72	0.74	0.57	79.72	8.80	1.41	0.97	0.58	8.60	2.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.23	0.42	0.42	1.04	0.92	0.22	0.22	0.14	0.73	0.52
d, Delay for Lane Group [s/veh]	228.34	12.41	12.23	127.27	26.44	43.76	43.31	42.58	50.58	43.90
Lane Group LOS	F	B	B	F	C	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.16	4.27	5.55	1.67	17.80	0.44	0.62	0.39	2.17	1.81
50th-Percentile Queue Length [ft/ln]	28.88	106.79	138.72	41.81	445.02	10.89	15.41	9.81	54.33	45.36
95th-Percentile Queue Length [veh/ln]	2.08	7.66	9.41	3.01	24.72	0.78	1.11	0.71	3.91	3.27
95th-Percentile Queue Length [ft/ln]	51.99	191.52	235.30	75.26	618.00	19.61	27.74	17.66	97.79	81.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	228.34	12.31	12.23	127.27	26.44	26.44	43.51	43.31	42.58	50.58	43.90	43.90
Movement LOS	F	B	B	F	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	17.30			30.70			43.24			47.39		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	26.67											
Intersection LOS	C											
Intersection V/C	0.727											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	38.98	38.98	38.98	38.98
l_p,int, Pedestrian LOS Score for Intersectio	2.483	2.698	2.146	1.999
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	608	608
d_b, Bicycle Delay [s]	31.44	31.46	23.94	23.94
l_b,int, Bicycle LOS Score for Intersection	2.238	3.007	1.655	1.815
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	17	638	4	5	687	122	151	3	36	3	7	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	638	4	5	687	122	151	3	36	3	7	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	168	1	1	181	32	40	1	9	1	2	1
Total Analysis Volume [veh/h]	18	672	4	5	723	128	159	3	38	3	7	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing m	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			59			13			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	94	94	94	94	94	94	36	36	36	0	36	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	100	100	100	100	22	22
g / C, Green / Cycle	0.77	0.77	0.77	0.77	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.36	0.01	0.47	0.15	0.01
s, saturation flow rate [veh/h]	648	1868	763	1805	1335	1730
c, Capacity [veh/h]	410	1438	529	1390	272	322
d1, Uniform Delay [s]	13.72	5.38	9.38	6.49	52.66	45.46
k, delay calibration	0.50	0.50	0.50	0.50	0.16	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	1.10	0.03	2.02	5.75	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.47	0.01	0.61	0.73	0.04
d, Delay for Lane Group [s/veh]	13.92	6.48	9.41	8.51	58.41	45.51
Lane Group LOS	B	A	A	A	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.28	6.42	0.06	9.50	6.82	0.39
50th-Percentile Queue Length [ft/ln]	6.91	160.41	1.48	237.43	170.49	9.80
95th-Percentile Queue Length [veh/ln]	0.50	10.57	0.11	14.55	11.10	0.71
95th-Percentile Queue Length [ft/ln]	12.44	264.27	2.66	363.78	277.56	17.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.92	6.48	6.48	9.41	8.51	8.51	58.41	58.41	58.41	45.51	45.51	45.51
Movement LOS	B	A	A	A	A	A	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	6.67			8.52			58.41			45.51		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	13.74											
Intersection LOS	B											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.43	54.43	54.43	54.43
l_p,int, Pedestrian LOS Score for Intersectio	2.357	2.734	1.930	1.750
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1384	1384	491	491
d_b, Bicycle Delay [s]	6.19	6.35	37.22	37.11
l_b,int, Bicycle LOS Score for Intersection	2.705	2.972	1.890	1.583
Bicycle LOS	B	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	4	504	62	35	671	1	27	69	12	92	108	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	504	62	35	671	1	27	69	12	92	108	114
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	135	17	9	179	0	7	18	3	25	29	30
Total Analysis Volume [veh/h]	4	538	66	37	717	1	29	74	13	98	115	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing m	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			32			7			13		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	64	64	64	64	64	64	26	26	26	0	26	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	63	63	63	63	19	19	19	19
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.01	0.33	0.05	0.38	0.03	0.05	0.08	0.14
s, saturation flow rate [veh/h]	733	1826	815	1869	1138	1802	1282	1680
c, Capacity [veh/h]	442	1274	514	1305	143	380	267	355
d1, Uniform Delay [s]	11.60	6.14	10.32	6.67	41.18	29.44	35.56	32.62
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	1.27	0.27	1.67	0.69	0.30	0.84	2.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.47	0.07	0.55	0.20	0.23	0.37	0.67
d, Delay for Lane Group [s/veh]	11.64	7.40	10.59	8.34	41.87	29.74	36.40	34.80
Lane Group LOS	B	A	B	A	D	C	D	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.04	4.88	0.39	6.33	0.65	1.59	2.05	4.92
50th-Percentile Queue Length [ft/ln]	1.12	121.89	9.74	158.15	16.26	39.78	51.14	123.02
95th-Percentile Queue Length [veh/ln]	0.08	8.50	0.70	10.45	1.17	2.86	3.68	8.56
95th-Percentile Queue Length [ft/ln]	2.02	212.42	17.53	261.27	29.27	71.60	92.05	213.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.64	7.40	7.40	10.59	8.34	8.34	41.87	29.74	29.74	36.40	34.80	34.80
Movement LOS	B	A	A	B	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	7.43			8.45			32.77			35.26		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	14.62											
Intersection LOS	B											
Intersection V/C	0.569											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersectio	2.468	2.465	2.009	2.131
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1331	1331	487	487
d_b, Bicycle Delay [s]	5.11	5.12	25.86	25.94
l_b,int, Bicycle LOS Score for Intersection	2.563	2.805	1.751	2.112
Bicycle LOS	B	C	A	B

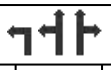
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	50.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	32	203	102	356	118	394	71	261	144	245	208	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	32	203	102	356	118	394	71	261	144	245	208	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	53	27	93	31	103	18	68	38	64	54	3
Total Analysis Volume [veh/h]	33	211	106	371	123	410	74	272	150	255	217	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10			2			10			2		
v_di, Inbound Pedestrian Volume crossing m	10			2			10			2		
v_co, Outbound Pedestrian Volume crossing	5			3			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			3			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	17			17			6			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	22	22	22	75	75	75	16	16	16	16	18	18	18
g / C, Green / Cycle	0.15	0.15	0.15	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.11	0.07	0.14	0.14	0.26	0.04	0.08	0.08	0.09	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1781	1870	1469	1781	1824	1558	1781	1870	1813	1524	1781	1816	1829
c, Capacity [veh/h]	262	275	216	896	918	784	189	198	192	162	215	220	221
d1, Uniform Delay [s]	55.53	61.43	58.39	21.48	21.42	24.94	62.48	65.00	65.07	65.21	63.60	63.57	63.60
k, delay calibration	0.11	0.14	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	5.85	1.72	0.76	0.72	2.49	1.32	5.41	5.83	8.94	4.94	4.77	4.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.77	0.49	0.27	0.27	0.52	0.39	0.74	0.75	0.80	0.74	0.74	0.74
d, Delay for Lane Group [s/veh]	55.74	67.27	60.11	22.24	22.14	27.43	63.80	70.41	70.91	74.15	68.55	68.34	68.41
Lane Group LOS	E	E	E	C	C	C	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.11	8.21	3.81	5.35	5.37	10.52	2.72	5.79	5.71	5.26	6.20	6.28	6.36
50th-Percentile Queue Length [ft/ln]	27.81	205.15	95.21	133.76	134.13	263.09	68.01	144.7	142.7	131.5	155.03	157.05	158.95
95th-Percentile Queue Length [veh/ln]	2.00	12.90	6.86	9.14	9.16	15.84	4.90	9.74	9.63	9.02	10.28	10.39	10.49
95th-Percentile Queue Length [ft/ln]	50.06	322.60	171.38	228.60	229.09	396.10	122.4	243.4	240.7	225.5	257.12	259.81	262.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.74	67.27	60.11	22.20	22.14	27.43	63.80	70.64	73.92	68.47	68.39	68.41
Movement LOS	E	E	E	C	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	64.02			24.57			70.55			68.43		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	50.47											
Intersection LOS	D											
Intersection V/C	0.582											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersectio	2.291	2.733	4.255	2.558
Crosswalk LOS	B	B	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.43	39.69	50.30	44.75
l_b,int, Bicycle LOS Score for Intersection	2.137	3.051	2.794	1.960
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	395	53	16	466	13	159	75	17	78	113	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	395	53	16	466	13	159	75	17	78	113	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	110	15	4	129	4	44	21	5	22	31	15
Total Analysis Volume [veh/h]	23	439	59	18	518	14	177	83	19	87	126	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			19			18			18		
v_di, Inbound Pedestrian Volume crossing m	18			18			19			18		
v_co, Outbound Pedestrian Volume crossing	25			20			26			21		
v_ci, Inbound Pedestrian Volume crossing mi	26			21			25			20		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	52			17			11			37		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	4	4	5	5	5	4	4	4	4	4	4
Maximum Green [s]	20	71	71	20	71	71	30	26	30	26	30	26
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	44	44	10	44	44	28	28	28	28	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.70	0.00	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	79	71	79	71	26	26	30	30
g / C, Green / Cycle	0.53	0.48	0.53	0.48	0.17	0.17	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.02	0.29	0.10	0.06	0.05	0.11
s, saturation flow rate [veh/h]	940	1801	961	1857	1781	1748	1781	1646
c, Capacity [veh/h]	384	864	399	885	311	305	359	331
d1, Uniform Delay [s]	20.19	27.90	19.76	28.62	56.37	53.92	49.96	53.61
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	2.80	0.05	3.02	7.38	2.94	1.60	6.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.58	0.05	0.60	0.57	0.33	0.24	0.56
d, Delay for Lane Group [s/veh]	20.49	30.70	19.81	31.64	63.76	56.86	51.56	60.41
Lane Group LOS	C	C	B	C	E	E	D	E
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	13.50	0.31	14.73	6.78	3.64	2.94	7.03
50th-Percentile Queue Length [ft/ln]	10.46	337.57	7.67	368.35	169.55	90.89	73.46	175.87
95th-Percentile Queue Length [veh/ln]	0.75	19.53	0.55	21.03	11.05	6.54	5.29	11.38
95th-Percentile Queue Length [ft/ln]	18.83	488.23	13.80	525.73	276.32	163.60	132.22	284.62

Movement, Approach, & Intersection Results

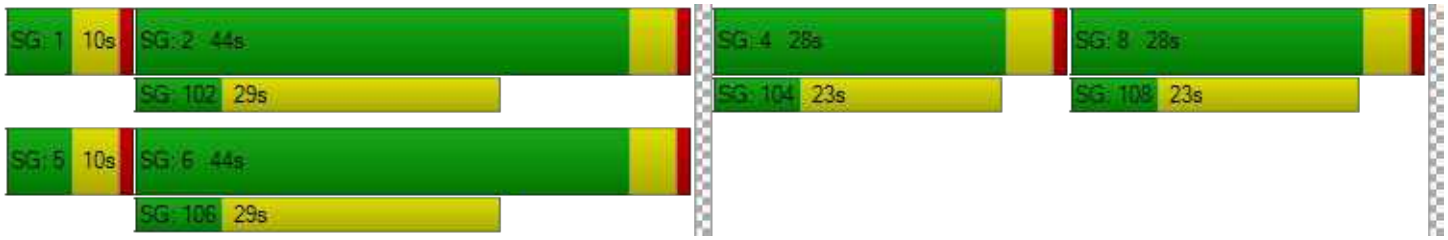
d_M, Delay for Movement [s/veh]	20.49	30.70	30.70	19.81	31.64	31.64	63.76	56.86	56.86	51.56	60.41	60.41
Movement LOS	C	C	C	B	C	C	E	E	E	D	E	E
d_A, Approach Delay [s/veh]	30.25			31.25			61.23			57.60		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	40.53											
Intersection LOS	D											
Intersection V/C	0.520											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.88	63.88	63.88	63.88
l_p,int, Pedestrian LOS Score for Intersectio	2.379	2.320	2.133	2.087
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	528	313	313
d_b, Bicycle Delay [s]	41.43	40.70	53.28	53.99
l_b,int, Bicycle LOS Score for Intersection	2.419	2.467	2.020	2.012
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	10	271	40	13	339	72	40	107	8	87	149	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	271	40	13	339	72	40	107	8	87	149	49
Peak Hour Factor	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	81	12	4	101	21	12	32	2	26	44	15
Total Analysis Volume [veh/h]	12	323	48	15	404	86	48	128	10	104	178	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	13			32			14			33		
v_di, Inbound Pedestrian Volume crossing m	14			33			13			32		
v_co, Outbound Pedestrian Volume crossing	12			26			25			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			25			26			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			39			21			32		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	56	56	56	56
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	20	20	10	14
g / C, Green / Cycle	0.36	0.36	0.18	0.25
(v / s)_i Volume / Saturation Flow Rate	0.21	0.29	0.10	0.19
s, saturation flow rate [veh/h]	1807	1741	1829	1789
c, Capacity [veh/h]	711	687	324	440
d1, Uniform Delay [s]	14.81	16.38	21.28	19.82
k, delay calibration	0.11	0.11	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	1.64	1.60	2.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.73	0.57	0.77
d, Delay for Lane Group [s/veh]	15.45	18.02	22.89	22.00
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.72	5.55	2.26	4.01
50th-Percentile Queue Length [ft/ln]	93.00	138.85	56.47	100.18
95th-Percentile Queue Length [veh/ln]	6.70	9.42	4.07	7.21
95th-Percentile Queue Length [ft/ln]	167.41	235.47	101.65	180.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.45	15.45	15.45	18.02	18.02	18.02	22.89	22.89	22.89	22.00	22.00	22.00
Movement LOS	B	B	B	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	15.45			18.02			22.89			22.00		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.92											
Intersection LOS	B											
Intersection V/C	0.626											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.22	19.87	18.22	18.22
l_p,int, Pedestrian LOS Score for Intersectio	2.051	2.075	1.883	1.982
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1066	1066	1066	1066
d_b, Bicycle Delay [s]	6.23	6.26	6.21	6.24
l_b,int, Bicycle LOS Score for Intersection	2.192	2.393	1.867	2.121
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	52.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	12.175

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	4	16	8	117	10	188	19	828	126	147	1466	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	8	117	10	188	19	828	126	147	1466	26
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	31	3	49	5	217	33	38	383	7
Total Analysis Volume [veh/h]	4	17	8	122	10	197	20	866	132	154	1533	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	40	0	0	40	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	40	0	0	40	0	15	85	0	25	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	34	34	34	34	6	85	85	15	94	94
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.04	0.57	0.57	0.10	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	11.52	0.13	0.01	0.24	0.08	0.09	0.29	0.29
s, saturation flow rate [veh/h]	457	1589	11	1564	1781	3560	1556	1781	3560	1851
c, Capacity [veh/h]	132	359	49	353	67	2023	884	177	2242	1165
d1, Uniform Delay [s]	47.63	45.16	73.58	51.29	69.31	9.43	8.26	64.15	5.36	5.36
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	0.02	822.53	1.38	2.44	0.66	0.36	12.39	0.68	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.02	2.71	0.56	0.30	0.43	0.15	0.87	0.46	0.46
d, Delay for Lane Group [s/veh]	48.19	45.19	896.11	52.67	71.75	10.10	8.61	76.54	6.03	6.66
Lane Group LOS	D	D	F	D	E	B	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.66	0.24	13.04	6.74	0.79	4.45	1.26	6.23	3.41	3.75
50th-Percentile Queue Length [ft/ln]	16.46	6.10	325.88	168.39	19.71	111.20	31.60	155.80	85.15	93.75
95th-Percentile Queue Length [veh/ln]	1.18	0.44	23.46	10.99	1.42	7.91	2.28	10.33	6.13	6.75
95th-Percentile Queue Length [ft/ln]	29.62	10.98	586.58	274.80	35.47	197.67	56.88	258.15	153.28	168.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.19	48.19	45.19	896.11	896.11	52.67	71.75	10.10	8.61	76.54	6.24	6.66
Movement LOS	D	D	D	F	F	D	E	B	A	E	A	A
d_A, Approach Delay [s/veh]	47.36			391.07			11.11			12.56		
Approach LOS	D			F			B			B		
d_I, Intersection Delay [s/veh]	52.71											
Intersection LOS	D											
Intersection V/C	12.175											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.40	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.979	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1040	1173
d_b, Bicycle Delay [s]	44.85	44.94	17.30	12.84
l_b,int, Bicycle LOS Score for Intersection	1.607	2.102	2.399	2.502
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	243	132	91	49	218	37	111	733	37	89	1015	199
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	132	91	49	218	37	111	733	37	89	1015	199
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	35	24	13	59	10	30	197	10	24	273	53
Total Analysis Volume [veh/h]	261	142	98	53	234	40	119	788	40	96	1091	214
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			2			5			3		
v_di, Inbound Pedestrian Volume crossing m	5			3			5			2		
v_co, Outbound Pedestrian Volume crossing	2			6			6			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			6			6			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	18			15			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	32	0	0	32	0	15	71	0	15	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	24	24	24	24	24	24	12	76	76	10	75	75
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.16	0.16	0.08	0.51	0.51	0.07	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.07	0.03	0.13	0.03	0.07	0.22	0.03	0.05	0.31	0.14
s, saturation flow rate [veh/h]	1781	1842	1504	1781	1870	1524	1781	3560	1535	1781	3560	1541
c, Capacity [veh/h]	290	300	245	290	305	248	137	1805	778	117	1768	765
d1, Uniform Delay [s]	59.18	59.18	56.06	54.22	60.13	53.96	66.60	14.46	12.19	67.59	17.22	14.18
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.83	2.74	1.05	0.30	4.07	0.30	14.78	0.77	0.13	12.89	1.63	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.68	0.40	0.18	0.77	0.16	0.87	0.44	0.05	0.82	0.62	0.28
d, Delay for Lane Group [s/veh]	62.01	61.92	57.11	54.52	64.20	54.26	81.38	15.23	12.32	80.48	18.85	15.09
Lane Group LOS	E	E	E	D	E	D	F	B	B	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.36	7.61	3.42	1.79	8.97	1.34	4.94	5.46	0.49	3.99	9.82	3.05
50th-Percentile Queue Length [ft/ln]	184.10	190.19	85.38	44.65	224.26	33.60	123.51	136.55	12.30	99.74	245.56	76.17
95th-Percentile Queue Length [veh/ln]	11.81	12.13	6.15	3.21	13.88	2.42	8.59	9.29	0.89	7.18	14.96	5.48
95th-Percentile Queue Length [ft/ln]	295.36	303.27	153.68	80.36	347.06	60.48	214.64	232.37	22.14	179.52	374.06	137.10

Movement, Approach, & Intersection Results

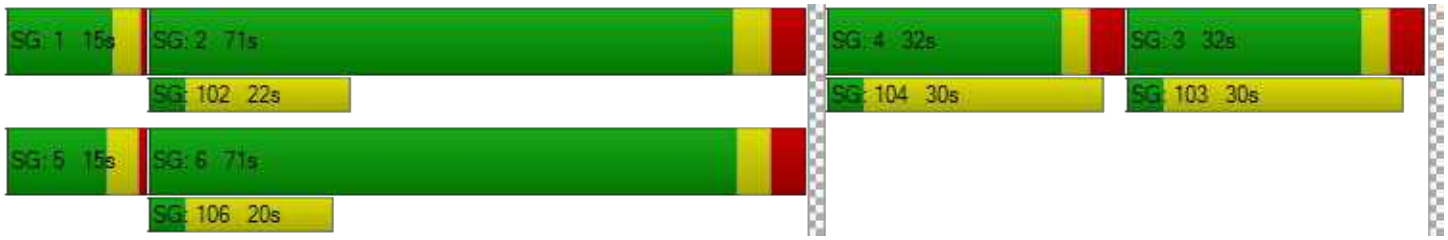
d_M, Delay for Movement [s/veh]	61.99	61.92	57.11	54.52	64.20	54.26	81.38	15.23	12.32	80.48	18.85	15.09
Movement LOS	E	E	E	D	E	D	F	B	B	F	B	B
d_A, Approach Delay [s/veh]	61.02			61.42			23.42			22.50		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	32.86											
Intersection LOS	C											
Intersection V/C	0.626											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.25	67.25	67.25	67.25
l_p,int, Pedestrian LOS Score for Intersectio	2.417	2.280	2.894	2.884
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	340	850	845
d_b, Bicycle Delay [s]	52.17	52.09	24.85	25.14
l_b,int, Bicycle LOS Score for Intersection	2.386	2.099	2.341	2.715
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	97	219	58	93	271	44	108	717	73	111	894	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	219	58	93	271	44	108	717	73	111	894	87
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	59	16	25	73	12	29	193	20	30	240	23
Total Analysis Volume [veh/h]	104	235	62	100	291	47	116	771	78	119	961	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	19			38			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	130.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	28	35	0	28	35	0	12	67	0	20	75	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	34	34	10	28	28	8	77	77	12	81	81
g / C, Green / Cycle	0.10	0.22	0.22	0.07	0.19	0.19	0.05	0.51	0.51	0.08	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.04	0.06	0.16	0.03	0.07	0.22	0.05	0.07	0.27	0.06
s, saturation flow rate [veh/h]	1781	1870	1540	1781	1870	1499	1781	3560	1589	1781	3560	1544
c, Capacity [veh/h]	186	417	344	124	352	282	97	1825	815	142	1916	831
d1, Uniform Delay [s]	63.97	51.87	47.19	68.88	58.63	51.02	68.34	5.88	5.42	66.16	12.32	10.18
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	1.19	0.25	11.35	4.94	0.27	109.38	0.72	0.23	11.92	0.94	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.56	0.18	0.80	0.83	0.17	1.20	0.42	0.10	0.84	0.50	0.11
d, Delay for Lane Group [s/veh]	66.56	53.06	47.44	80.23	63.58	51.29	177.72	6.60	5.66	78.08	13.27	10.46
Lane Group LOS	E	D	D	F	E	D	F	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.96	8.13	1.94	4.22	11.24	1.53	6.53	2.32	0.46	4.86	6.18	1.04
50th-Percentile Queue Length [ft/ln]	99.09	203.19	48.54	105.58	281.03	38.33	163.30	57.91	11.57	121.51	154.49	25.93
95th-Percentile Queue Length [veh/ln]	7.13	12.80	3.49	7.59	16.74	2.76	11.28	4.17	0.83	8.48	10.26	1.87
95th-Percentile Queue Length [ft/ln]	178.37	320.08	87.37	189.84	418.49	69.00	281.89	104.23	20.83	211.90	256.41	46.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.56	53.06	47.44	80.23	63.58	51.29	177.72	6.60	5.66	78.08	13.27	10.46
Movement LOS	E	D	D	F	E	D	F	A	A	E	B	B
d_A, Approach Delay [s/veh]	55.69			66.06			27.09			19.61		
Approach LOS	E			E			C			B		
d_I, Intersection Delay [s/veh]	33.73											
Intersection LOS	C											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.28	67.28	67.28	67.28
l_p,int, Pedestrian LOS Score for Intersectio	2.340	2.334	2.818	2.820
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	365	791	898
d_b, Bicycle Delay [s]	50.65	51.14	27.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.221	2.282	2.356	2.528
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	5.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	25	14	18	57	25	45	0	870	70	0	1079	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	14	18	57	25	45	0	870	70	0	1079	60
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	1.0000	0.9130	0.9130	1.0000	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	5	16	7	12	0	238	19	0	295	16
Total Analysis Volume [veh/h]	27	15	20	62	27	49	0	953	77	0	1182	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			8			7			0		
v_di, Inbound Pedestrian Volume crossing m	0			7			8			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			36			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	143.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	37	0	0	37	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	12	12	12	13	13	112	112	112	112
g / C, Green / Cycle	0.08	0.08	0.08	0.09	0.09	0.74	0.74	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.01	0.03	0.05	0.27	0.05	0.33	0.04
s, saturation flow rate [veh/h]	1781	1870	1510	1781	1556	3560	1540	3560	1555
c, Capacity [veh/h]	146	154	124	155	135	2645	1144	2645	1155
d1, Uniform Delay [s]	64.17	63.71	64.00	64.80	65.75	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.60	0.27	0.60	1.67	3.62	0.38	0.11	0.55	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.10	0.16	0.40	0.56	0.36	0.07	0.45	0.06
d, Delay for Lane Group [s/veh]	64.77	63.98	64.61	66.47	69.37	0.38	0.11	0.55	0.09
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	0.55	0.74	2.35	2.96	0.14	0.04	0.20	0.03
50th-Percentile Queue Length [ft/ln]	24.86	13.67	18.43	58.64	74.12	3.52	0.90	5.04	0.76
95th-Percentile Queue Length [veh/ln]	1.79	0.98	1.33	4.22	5.34	0.25	0.06	0.36	0.05
95th-Percentile Queue Length [ft/ln]	44.74	24.60	33.18	105.56	133.41	6.33	1.62	9.07	1.36

Movement, Approach, & Intersection Results

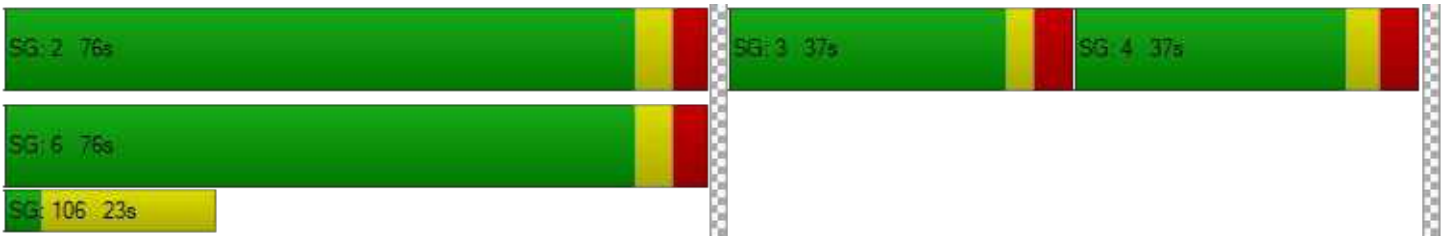
d_M, Delay for Movement [s/veh]	64.77	63.98	64.61	66.47	69.37	69.37	0.00	0.38	0.11	0.00	0.55	0.09
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	64.53			68.07			0.36			0.52		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.82											
Intersection LOS	A											
Intersection V/C	0.407											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.029	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	392	912	912
d_b, Bicycle Delay [s]	48.35	49.38	22.23	22.25
l_b,int, Bicycle LOS Score for Intersection	1.662	1.787	2.409	2.589
Bicycle LOS	A	A	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	271	68	355	193	44	104	844	403	104	938	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	271	68	355	193	44	104	844	403	104	938	18
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	76	19	100	54	12	29	238	113	29	264	5
Total Analysis Volume [veh/h]	72	305	77	400	217	50	117	950	454	117	1056	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			10			0			10		
v_di, Inbound Pedestrian Volume crossing m	0			10			0			10		
v_co, Outbound Pedestrian Volume crossing	12			0			0			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			0			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	41			11			1			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		No			Yes		No	Yes		No	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	60	60	24	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.40	0.40	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.12	0.12	0.03	0.07	0.27	0.29	0.07	0.30	0.01
s, saturation flow rate [veh/h]	1841	1714	3459	1870	1503	1781	3560	1570	1781	3560	1512
c, Capacity [veh/h]	295	274	665	360	289	202	1425	628	285	1591	676
d1, Uniform Delay [s]	60.50	60.86	55.33	55.35	50.52	60.34	27.75	28.52	49.18	13.46	10.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.48	22.64	3.99	7.30	1.30	11.56	2.49	7.07	4.33	2.20	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.81	0.60	0.60	0.17	0.58	0.67	0.72	0.41	0.66	0.03
d, Delay for Lane Group [s/veh]	78.98	83.50	59.31	62.65	51.81	71.90	30.23	35.59	53.50	15.67	10.74
Lane Group LOS	E	F	E	E	D	E	C	D	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.98	9.98	7.32	8.28	1.69	4.69	11.78	12.46	3.80	6.21	0.20
50th-Percentile Queue Length [ft/ln]	249.46	249.43	183.08	206.98	42.29	117.33	294.51	311.50	94.96	155.21	5.02
95th-Percentile Queue Length [veh/ln]	15.16	15.16	11.76	13.00	3.05	8.25	17.41	18.25	6.84	10.29	0.36
95th-Percentile Queue Length [ft/ln]	378.98	378.93	294.03	324.95	76.13	206.15	435.23	456.23	170.92	257.37	9.04

Movement, Approach, & Intersection Results

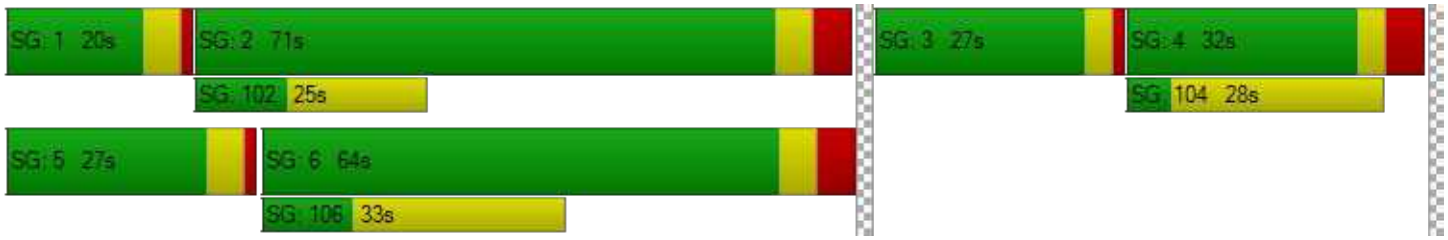
d_M, Delay for Movement [s/veh]	78.98	81.15	83.50	59.31	62.65	51.81	71.90	30.23	35.59	53.50	15.67	10.74
Movement LOS	E	F	F	E	E	D	E	C	D	D	B	B
d_A, Approach Delay [s/veh]	81.20			59.84			35.04			19.29		
Approach LOS	F			E			D			B		
d_I, Intersection Delay [s/veh]	39.92											
Intersection LOS	D											
Intersection V/C	0.625											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.225	2.726	0.000	2.908
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.90	52.38	29.54	25.35
l_b,int, Bicycle LOS Score for Intersection	1.934	2.660	2.814	2.544
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	4.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.379

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	36	1	29	6	2	11	24	1202	14	40	1421	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	1	29	6	2	11	24	1202	14	40	1421	24
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9500	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	0	8	2	1	3	6	322	4	11	380	6
Total Analysis Volume [veh/h]	39	1	31	6	2	12	26	1287	15	43	1521	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	6			4			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			4			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			0			3			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	40	40	40	40	40	40	24	86	86	24	86	86
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	13	13	13	7	123	123	5	121	121
g / C, Green / Cycle	0.08	0.08	0.08	0.04	0.82	0.82	0.03	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.01	0.01	0.24	0.24	0.02	0.29	0.29
s, saturation flow rate [veh/h]	1351	1365	1578	1781	3560	1857	1781	3560	1851
c, Capacity [veh/h]	150	156	132	79	2912	1519	56	2866	1490
d1, Uniform Delay [s]	66.79	63.26	63.47	68.45	0.00	0.00	71.33	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.31	0.13	0.30	2.42	0.26	0.49	19.64	0.35	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.05	0.09	0.33	0.29	0.29	0.77	0.35	0.36
d, Delay for Lane Group [s/veh]	69.09	63.40	63.77	70.87	0.26	0.49	90.98	0.35	0.67
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.76	0.29	0.45	1.01	0.10	0.21	1.93	0.14	0.28
50th-Percentile Queue Length [ft/ln]	69.12	7.37	11.14	25.16	2.60	5.20	48.20	3.44	6.88
95th-Percentile Queue Length [veh/ln]	4.98	0.53	0.80	1.81	0.19	0.37	3.47	0.25	0.50
95th-Percentile Queue Length [ft/ln]	124.41	13.26	20.05	45.29	4.68	9.36	86.76	6.18	12.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.09	69.09	69.09	63.40	63.40	63.77	70.87	0.34	0.49	90.98	0.45	0.67
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.09			63.62			1.72			2.90		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	4.35											
Intersection LOS	A											
Intersection V/C	0.379											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.21	67.21	0.00	64.40
l_p,int, Pedestrian LOS Score for Intersectio	1.792	1.979	0.000	3.150
Crosswalk LOS	A	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1052	1052
d_b, Bicycle Delay [s]	45.22	44.85	16.88	16.89
l_b,int, Bicycle LOS Score for Intersection	1.677	1.593	2.290	2.434
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.566

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	166	2	204	0	2	0	191	1005	4	2	1306	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	2	204	0	2	0	191	1005	4	2	1306	96
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	1	54	0	1	0	50	264	1	1	343	25
Total Analysis Volume [veh/h]	175	2	215	0	2	0	201	1057	4	2	1373	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			0			3			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	10	0	0	10	0	4	10	0	4	15	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	40	40	0	0	40	0	35	75	0	35	75	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	26	26	26	26	19	114	114	0	95	95
g / C, Green / Cycle	0.17	0.17	0.17	0.17	0.13	0.76	0.76	0.00	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.12	0.14	0.00	0.00	0.11	0.20	0.20	0.00	0.27	0.28
s, saturation flow rate [veh/h]	1415	1563	1164	1870	1781	3560	1866	1781	3560	1796
c, Capacity [veh/h]	273	270	80	323	225	2697	1413	5	2257	1138
d1, Uniform Delay [s]	60.49	59.65	0.00	51.42	61.39	0.00	0.00	74.61	5.04	5.04
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	5.60	0.00	0.01	11.63	0.23	0.44	45.45	0.61	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.81	0.00	0.01	0.89	0.26	0.26	0.40	0.43	0.44
d, Delay for Lane Group [s/veh]	62.98	65.25	0.00	51.43	73.02	0.23	0.44	120.06	5.64	6.26
Lane Group LOS	E	E	A	D	E	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.61	8.38	0.00	0.06	8.02	0.09	0.17	0.14	3.03	3.26
50th-Percentile Queue Length [ft/ln]	165.24	209.58	0.00	1.60	200.42	2.17	4.35	3.49	75.73	81.61
95th-Percentile Queue Length [veh/ln]	10.83	13.13	0.00	0.12	12.66	0.16	0.31	0.25	5.45	5.88
95th-Percentile Queue Length [ft/ln]	270.65	328.29	0.00	2.88	316.51	3.91	7.82	6.28	136.31	146.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.98	65.25	65.25	0.00	51.43	51.43	73.02	0.30	0.44	120.06	5.82	6.26
Movement LOS	E	E	E	A	D	D	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.24			51.43			11.89			6.01		
Approach LOS	E			D			B			A		
d_I, Intersection Delay [s/veh]	15.69											
Intersection LOS	B											
Intersection V/C	0.566											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.969	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	905	905
d_b, Bicycle Delay [s]	44.97	44.86	22.51	22.52
l_b,int, Bicycle LOS Score for Intersection	2.206	1.563	2.254	2.371
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.393

Intersection Setup

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	14	1	38	3	0	3	85	1174	3	27	1491	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	6.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	1	38	3	0	3	85	1174	3	27	1491	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	10	1	0	1	22	309	1	7	392	3
Total Analysis Volume [veh/h]	15	1	40	3	0	3	89	1236	3	28	1569	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			5			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	35	0	0	35	0	15	105	0	15	105	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	9	122	122	3	116	116
g / C, Green / Cycle	0.09	0.09	0.09	0.06	0.81	0.81	0.02	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.00	0.05	0.23	0.23	0.02	0.29	0.29
s, saturation flow rate [veh/h]	1539	1589	1398	1781	3560	1867	1781	3560	1862
c, Capacity [veh/h]	182	140	159	109	2888	1515	37	2742	1434
d1, Uniform Delay [s]	62.91	63.96	62.57	68.02	0.00	0.00	72.60	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	1.10	0.10	13.32	0.24	0.46	27.36	0.40	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.28	0.04	0.81	0.28	0.28	0.76	0.38	0.38
d, Delay for Lane Group [s/veh]	63.12	65.06	62.67	81.33	0.24	0.46	99.96	0.40	0.76
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.58	1.49	0.22	3.70	0.10	0.20	1.34	0.15	0.30
50th-Percentile Queue Length [ft/ln]	14.53	37.33	5.49	92.53	2.45	4.89	33.59	3.80	7.59
95th-Percentile Queue Length [veh/ln]	1.05	2.69	0.40	6.66	0.18	0.35	2.42	0.27	0.55
95th-Percentile Queue Length [ft/ln]	26.15	67.19	9.89	166.55	4.40	8.80	60.47	6.83	13.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.12	63.12	65.06	62.67	62.67	62.67	81.33	0.32	0.46	99.96	0.52	0.76
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.51			62.67			5.75			2.25		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.09											
Intersection LOS	A											
Intersection V/C	0.393											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.008	1.750	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	373	373	1307	1307
d_b, Bicycle Delay [s]	49.62	49.62	9.04	9.04
l_b,int, Bicycle LOS Score for Intersection	1.652	1.570	2.290	2.444
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	9.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.485

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	378	348	77	262	224	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.93	1.92	2.00	1.94	1.90	1.74
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	348	77	262	224	90
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	93	21	70	60	24
Total Analysis Volume [veh/h]	405	373	82	281	240	96
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		12	
v_di, Inbound Pedestrian Volume crossing m	0		0		11	
v_co, Outbound Pedestrian Volume crossing	11		11		10	
v_ci, Inbound Pedestrian Volume crossing mi	12		10		11	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		91		16	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	10	10	2	16	7	7
g / C, Green / Cycle	0.32	0.32	0.07	0.51	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.22	0.24	0.05	0.15	0.13	0.07
s, saturation flow rate [veh/h]	1871	1538	1781	1871	1782	1450
c, Capacity [veh/h]	594	488	118	960	406	330
d1, Uniform Delay [s]	9.42	9.64	14.48	4.42	10.91	10.05
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.95	2.70	0.06	0.51	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.76	0.69	0.29	0.59	0.29
d, Delay for Lane Group [s/veh]	9.94	10.59	17.17	4.48	11.43	10.23
Lane Group LOS	A	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.80	1.75	0.56	0.55	1.20	0.44
50th-Percentile Queue Length [ft/ln]	45.09	43.71	14.10	13.70	30.02	10.94
95th-Percentile Queue Length [veh/ln]	3.25	3.15	1.02	0.99	2.16	0.79
95th-Percentile Queue Length [ft/ln]	81.17	78.67	25.38	24.65	54.03	19.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.94	10.59	17.17	4.48	11.43	10.23
Movement LOS	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	10.25		7.35		11.08	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.73					
Intersection LOS	A					
Intersection V/C	0.485					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	8.06	0.51
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.115	1.985
Crosswalk LOS	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1901	2535	1584
d_b, Bicycle Delay [s]	0.04	1.18	0.69
l_b,int, Bicycle LOS Score for Intersection	2.843	2.159	1.560
Bicycle LOS	C	B	A

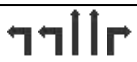
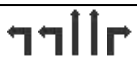
Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: Santa Cruz Ave/Sand Hill Rd

Control Type:	Signalized	Delay (sec / veh):	46.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	254	914	171	249	472	53	109	572	403	178	498	173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	254	914	171	249	472	53	109	572	403	178	498	173
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	234	44	64	121	14	28	147	103	46	128	44
Total Analysis Volume [veh/h]	260	936	175	255	484	54	112	586	413	182	510	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			3			1		
v_di, Inbound Pedestrian Volume crossing m	1			3			4			2		
v_co, Outbound Pedestrian Volume crossing	2			3			3			4		
v_ci, Inbound Pedestrian Volume crossing mi	3			4			2			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	33			33			29			49		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.6	4.3	4.3	3.6	4.3	4.3	3.6	4.1	4.1	3.6	4.1	4.1
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	19	47	47	20	48	48	13	53	53	20	60	60
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	4.3	4.3	2.6	4.3	4.3	2.6	4.1	4.1	2.6	4.1	4.1
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	6.30	6.30	4.60	6.30	6.30	4.60	6.10	6.10	4.60	6.10	6.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	4.30	4.30	2.60	4.30	4.30	2.60	4.10	4.10	2.60	4.10	4.10
g_i, Effective Green Time [s]	13	56	56	12	56	56	6	40	40	10	43	43
g / C, Green / Cycle	0.09	0.40	0.40	0.09	0.40	0.40	0.05	0.29	0.29	0.07	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.11	0.07	0.14	0.04	0.03	0.16	0.27	0.05	0.14	0.12
s, saturation flow rate [veh/h]	3459	3560	1536	3459	3560	1533	3459	3560	1523	3459	3560	1510
c, Capacity [veh/h]	311	1433	618	308	1430	616	160	1014	434	241	1097	465
d1, Uniform Delay [s]	62.72	33.93	28.10	62.74	29.03	25.96	65.83	42.89	48.41	63.98	39.12	37.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.28	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.93	2.33	1.15	5.69	0.64	0.28	5.46	0.52	22.59	4.78	0.31	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.65	0.28	0.83	0.34	0.09	0.70	0.58	0.95	0.76	0.46	0.38
d, Delay for Lane Group [s/veh]	68.65	36.26	29.25	68.43	29.67	26.24	71.29	43.41	71.00	68.75	39.43	38.23
Lane Group LOS	E	D	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.80	13.25	4.16	4.69	5.78	1.18	2.09	8.73	16.50	3.34	7.12	4.80
50th-Percentile Queue Length [ft/ln]	119.89	331.35	103.96	117.33	144.48	29.40	52.21	218.33	412.45	83.44	178.11	120.07
95th-Percentile Queue Length [veh/ln]	8.39	19.22	7.48	8.25	9.72	2.12	3.76	13.58	23.16	6.01	11.50	8.40
95th-Percentile Queue Length [ft/ln]	209.68	480.61	187.12	206.15	243.04	52.92	93.98	339.49	578.98	150.19	287.55	209.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.65	36.26	29.25	68.43	29.67	26.24	71.29	43.41	71.00	68.75	39.43	38.23
Movement LOS	E	D	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	41.51			41.90			56.48			45.33		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	46.40											
Intersection LOS	D											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.45	59.45	59.45	59.45
l_p,int, Pedestrian LOS Score for Intersectio	2.963	3.077	2.948	2.902
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	596	670	770
d_b, Bicycle Delay [s]	35.82	35.10	31.42	27.15
l_b,int, Bicycle LOS Score for Intersection	2.691	2.214	2.476	2.277
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	29.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	122	7	15	216	0	7	33	5	4	6	147	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	7	15	216	0	7	33	5	4	6	147	219
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	2	4	60	0	2	9	1	1	2	41	61
Total Analysis Volume [veh/h]	136	8	17	240	0	8	37	6	4	7	163	243
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	533	437	540
Degree of Utilization, x	0.75	0.12	0.77

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.52	0.39	7.00
95th-Percentile Queue Length [ft]	163.10	9.83	174.88
Approach Delay [s/veh]	27.43	12.33	28.74
Approach LOS	D	B	D
Intersection Delay [s/veh]	29.61		
Intersection LOS	D		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	324	60	0	3	5	68	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	60	0	3	5	68	3	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	17	0	1	1	19	1	0
Total Analysis Volume [veh/h]	360	67	0	3	6	76	3	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	509	436
Degree of Utilization, x	0.85	0.20

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.70	0.72
95th-Percentile Queue Length [ft]	217.57	17.90
Approach Delay [s/veh]	37.77	13.26
Approach LOS	E	B
Intersection Delay [s/veh]	29.61	
Intersection LOS	D	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	131	352	112	46	413	58	66	100	42	64	58	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	352	112	46	413	58	66	100	42	64	58	93
Peak Hour Factor	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	103	33	13	121	17	19	29	12	19	17	27
Total Analysis Volume [veh/h]	154	413	131	54	484	68	77	117	49	75	68	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	27			0			0			27		
v_di, Inbound Pedestrian Volume crossing m	27			0			0			27		
v_co, Outbound Pedestrian Volume crossing	6			0			6			0		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			6			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	26			2			7			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	49	49	49	49	49	49	49
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	21	27	19	13	13	13
g / C, Green / Cycle	0.56	0.43	0.56	0.39	0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.14	0.31	0.05	0.30	0.21	0.06	0.11
s, saturation flow rate [veh/h]	1071	1766	1000	1824	1168	1219	1545
c, Capacity [veh/h]	591	767	561	708	399	156	400
d1, Uniform Delay [s]	7.36	11.41	6.60	13.26	17.23	15.79	15.30
k, delay calibration	0.23	0.23	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.50	2.60	0.07	4.01	1.51	2.29	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.71	0.10	0.78	0.61	0.48	0.44
d, Delay for Lane Group [s/veh]	7.86	14.01	6.67	17.27	18.75	18.07	16.07
Lane Group LOS	A	B	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.57	4.19	0.17	4.95	2.56	0.75	1.58
50th-Percentile Queue Length [ft/ln]	14.37	104.73	4.36	123.78	64.01	18.79	39.46
95th-Percentile Queue Length [veh/ln]	1.03	7.54	0.31	8.60	4.61	1.35	2.84
95th-Percentile Queue Length [ft/ln]	25.87	188.51	7.85	215.02	115.22	33.83	71.02

Movement, Approach, & Intersection Results

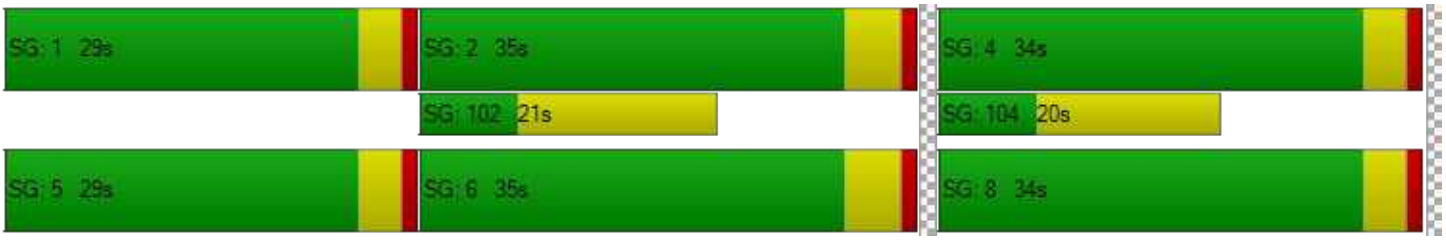
d_M, Delay for Movement [s/veh]	7.86	14.01	14.01	6.67	17.27	17.27	18.75	18.75	18.75	18.07	16.07	16.07
Movement LOS	A	B	B	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.65			16.32			18.75			16.67		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.27											
Intersection LOS	B											
Intersection V/C	0.610											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.82	0.00	14.82	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.534	0.000	1.918	0.000
Crosswalk LOS	B	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1220	1220	1220	1220
d_b, Bicycle Delay [s]	3.79	3.75	3.76	3.74
l_b,int, Bicycle LOS Score for Intersection	2.711	2.560	1.961	1.975
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		35.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	449	499	65	237	914	551
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	449	499	65	237	914	551
Peak Hour Factor	0.9660	0.9660	0.9660	0.9660	0.9660	0.9660
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	129	17	61	237	143
Total Analysis Volume [veh/h]	465	517	67	245	946	570
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	43		21		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	5	5	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	55	25	55	60	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	30	30	30	18	52	78	78
g / C, Green / Cycle	0.21	0.21	0.21	0.13	0.37	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.18	0.04	0.16	0.27	0.37
s, saturation flow rate [veh/h]	1781	1829	1870	1781	1574	3560	1561
c, Capacity [veh/h]	382	392	401	233	589	1986	871
d1, Uniform Delay [s]	52.58	52.58	52.58	54.89	32.36	18.61	21.31
k, delay calibration	0.11	0.11	0.11	0.11	0.25	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.88	4.76	4.66	0.67	1.07	0.82	3.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.84	0.84	0.29	0.42	0.48	0.65
d, Delay for Lane Group [s/veh]	57.46	57.34	57.24	55.57	33.43	19.43	25.13
Lane Group LOS	E	E	E	E	C	B	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.09	11.38	11.62	2.18	6.32	9.14	13.22
50th-Percentile Queue Length [ft/ln]	277.30	284.49	290.55	54.49	158.00	228.50	330.56
95th-Percentile Queue Length [veh/ln]	16.55	16.91	17.21	3.92	10.44	14.10	19.19
95th-Percentile Queue Length [ft/ln]	413.85	422.80	430.33	98.07	261.08	352.46	479.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.42	57.27	55.57	33.43	19.43	25.13
Movement LOS	E	E	E	C	B	C
d_A, Approach Delay [s/veh]	57.34		38.19		21.58	
Approach LOS	E		D		C	
d_I, Intersection Delay [s/veh]	35.92					
Intersection LOS	D					
Intersection V/C	0.718					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	721	299	788
d_b, Bicycle Delay [s]	29.26	51.15	25.89
l_b,int, Bicycle LOS Score for Intersection	2.370	1.560	2.810
Bicycle LOS	B	A	C

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Base Volume Input [veh/h]	1290	0	0	671	734	393
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1290	0	0	671	734	393
Peak Hour Factor	0.9640	1.0000	1.0000	0.9640	0.9640	0.9640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	335	0	0	174	190	102
Total Analysis Volume [veh/h]	1338	0	0	696	761	408
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	60	0	0	60	60	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	62	62	23	23
g / C, Green / Cycle	0.69	0.69	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.38	0.20	0.22	0.15
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2465	2465	891	725
d1, Uniform Delay [s]	6.83	5.30	31.85	29.05
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.86	0.29	0.93	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.28	0.85	0.56
d, Delay for Lane Group [s/veh]	7.69	5.59	32.78	29.31
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.44	2.17	7.78	3.77
50th-Percentile Queue Length [ft/ln]	135.93	54.34	194.42	94.33
95th-Percentile Queue Length [veh/ln]	9.26	3.91	12.35	6.79
95th-Percentile Queue Length [ft/ln]	231.53	97.80	308.76	169.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.69	0.00	0.00	5.59	32.78	29.31
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	7.69		5.59		31.57	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	15.95					
Intersection LOS	B					
Intersection V/C	0.646					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.49	34.71
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.728	2.416
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	564	1239
d_b, Bicycle Delay [s]	23.25	23.22	6.52
l_b,int, Bicycle LOS Score for Intersection	2.663	2.134	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	208	23	206	145	13	18	168	356	21	167	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	208	23	206	145	13	18	168	356	21	167	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	55	6	54	38	3	5	44	94	6	44	3
Total Analysis Volume [veh/h]	12	220	24	218	153	14	19	178	376	22	177	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	433	465	446	480	495	552	466
Degree of Utilization, x	0.03	0.52	0.49	0.35	0.40	0.68	0.45

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.09	2.99	2.63	1.54	1.89	5.19	2.32
95th-Percentile Queue Length [ft]	2.14	74.71	65.77	38.56	47.25	129.69	57.91
Approach Delay [s/veh]	18.32		16.49		19.51		16.97
Approach LOS	C		C		C		C
Intersection Delay [s/veh]	18.11						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.897

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	702	646	0	1417	542	0	0	0	276	0	233
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	702	646	0	1417	542	0	0	0	276	0	233
Peak Hour Factor	1.0000	0.9190	0.9190	1.0000	0.9190	0.9190	1.0000	1.0000	1.0000	0.9190	1.0000	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	191	176	0	385	147	0	0	0	75	0	63
Total Analysis Volume [veh/h]	0	764	703	0	1542	590	0	0	0	300	0	254
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	23	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	62	62	62		10	10
g / C, Green / Cycle	0.77	0.77	0.77		0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.15	0.30	0.63		0.09	0.09
s, saturation flow rate [veh/h]	5094	5094	941		3459	2813
c, Capacity [veh/h]	3938	3938	728		438	357
d1, Uniform Delay [s]	2.42	2.95	5.51		33.36	33.49
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.11	0.29	9.54		1.90	2.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.39	0.81		0.68	0.71
d, Delay for Lane Group [s/veh]	2.53	3.24	15.05		35.26	36.14
Lane Group LOS	A	A	B		D	D
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	0.68	1.69	5.33		2.83	2.44
50th-Percentile Queue Length [ft/ln]	17.12	42.33	133.25		70.68	60.90
95th-Percentile Queue Length [veh/ln]	1.23	3.05	9.12		5.09	4.38
95th-Percentile Queue Length [ft/ln]	30.81	76.19	227.90		127.23	109.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	2.53	0.00	0.00	3.24	15.05	0.00	0.00	0.00	35.26	0.00	36.14
Movement LOS		A			A	B				D		D
d_A, Approach Delay [s/veh]	1.37			6.51			0.00			35.66		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	10.05											
Intersection LOS	B											
Intersection V/C	0.897											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	31.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.946	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1326	1326	0	475
d_b, Bicycle Delay [s]	4.56	4.54	39.97	23.23
l_b,int, Bicycle LOS Score for Intersection	1.980	2.732	4.132	1.560
Bicycle LOS	A	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.780

Intersection Setup

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Base Volume Input [veh/h]	0	716	258	0	1477	432	0	0	0	425	0	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	716	258	0	1477	432	0	0	0	425	0	606
Peak Hour Factor	1.0000	0.9580	0.9580	1.0000	0.9580	0.9580	1.0000	1.0000	1.0000	0.9580	1.0000	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	187	67	0	385	113	0	0	0	111	0	158
Total Analysis Volume [veh/h]	0	747	269	0	1542	451	0	0	0	444	0	633
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	50	0	0	58	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	50	0	0	50	0	0	0	0	20	0	10
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	46	46	56		16	26
g / C, Green / Cycle	0.58	0.58	0.70		0.20	0.32
(v / s)_i Volume / Saturation Flow Rate	0.15	0.17	0.55		0.13	0.22
s, saturation flow rate [veh/h]	5094	1589	2828		3459	2813
c, Capacity [veh/h]	2936	916	1980		692	911
d1, Uniform Delay [s]	8.42	8.65	7.92		29.38	23.62
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.21	0.81	3.10		1.00	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.29	0.78		0.64	0.70
d, Delay for Lane Group [s/veh]	8.63	9.46	11.02		30.39	24.59
Lane Group LOS	A	A	B		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	1.97	2.33	4.85		3.89	5.08
50th-Percentile Queue Length [ft/ln]	49.17	58.17	121.15		97.27	126.97
95th-Percentile Queue Length [veh/ln]	3.54	4.19	8.46		7.00	8.77
95th-Percentile Queue Length [ft/ln]	88.51	104.71	211.40		175.08	219.37

Movement, Approach, & Intersection Results

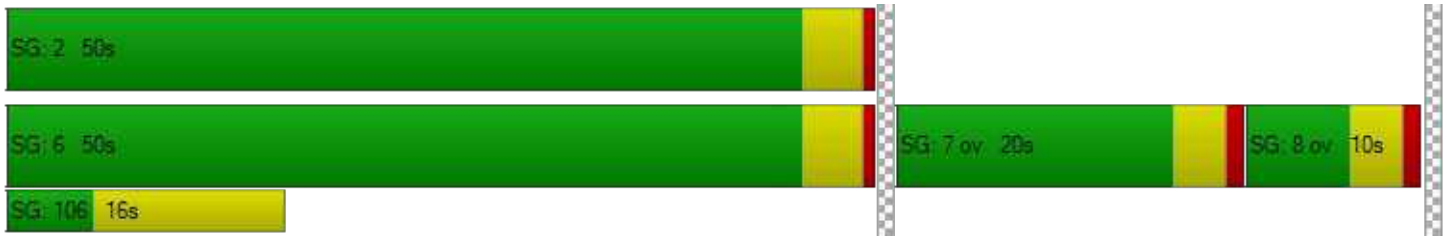
d_M, Delay for Movement [s/veh]	0.00	8.63	9.46	0.00	11.02	0.00	0.00	0.00	0.00	30.39	0.00	24.59
Movement LOS		A	A		B					C		C
d_A, Approach Delay [s/veh]	8.85			8.61			0.00			26.98		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	14.12											
Intersection LOS	B											
Intersection V/C	0.780											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.52	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1400	0	400
d_b, Bicycle Delay [s]	7.23	3.62	40.01	25.61
l_b,int, Bicycle LOS Score for Intersection	2.118	2.408	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.372

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	10	224	23	104	145	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	224	23	104	145	5
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	65	7	30	42	1
Total Analysis Volume [veh/h]	12	260	27	121	169	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	637	699	822	704
Degree of Utilization, x	0.02	0.37	0.18	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	1.72	0.65	0.98
95th-Percentile Queue Length [ft]	1.44	43.05	16.34	24.45
Approach Delay [s/veh]	10.76		8.34	9.80
Approach LOS	B		A	A
Intersection Delay [s/veh]	9.87			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	489	0	0	421	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	489	0	0	421	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	0	0	105	0	0
Total Analysis Volume [veh/h]	489	0	0	421	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.35	0.00	16.81	11.22
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		14.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	489	0	0	421	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	489	0	0	421	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	0	0	105	0	0
Total Analysis Volume [veh/h]	489	0	0	421	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.35	0.00	16.81	11.22
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		14.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.747

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	135	84	16	248	18	50	150	6	9	165	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	135	84	16	248	18	50	150	6	9	165	26
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	46	29	5	85	6	17	51	2	3	57	9
Total Analysis Volume [veh/h]	41	185	115	22	340	25	68	205	8	12	226	36
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	519	518	486	491
Degree of Utilization, x	0.66	0.75	0.58	0.56

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.74	6.37	3.60	3.38
95th-Percentile Queue Length [ft]	118.49	159.29	90.09	84.38
Approach Delay [s/veh]	22.25	27.67	20.06	19.23
Approach LOS	C	D	C	C
Intersection Delay [s/veh]	22.76			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	14.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	193	86	109	231	103	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	193	86	109	231	103	96
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	28	35	74	33	31
Total Analysis Volume [veh/h]	247	110	140	296	132	123
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	695	678	626
Degree of Utilization, x	0.51	0.64	0.41

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.96	4.68	1.98
95th-Percentile Queue Length [ft]	74.12	116.89	49.42
Approach Delay [s/veh]	13.54	17.35	12.64
Approach LOS	B	C	B
Intersection Delay [s/veh]	14.90		
Intersection LOS	B		

Intersection Level Of Service Report
Intersection 292: Ravenswood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	27.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	3	462	25	7	464	1	4	0	4	10	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	462	25	7	464	1	4	0	4	10	0	27
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	136	7	2	136	0	1	0	1	3	0	8
Total Analysis Volume [veh/h]	4	544	29	8	546	1	5	0	5	12	0	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.01	0.01	0.00	0.03	0.00	0.01	0.07	0.00	0.06
d_M, Delay for Movement [s/veh]	8.53	0.00	0.00	8.61	0.00	0.00	27.65	23.57	12.41	27.02	24.85	13.23
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.12	0.12	0.12	0.43	0.43	0.43
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	0.33	0.33	0.33	3.12	3.12	3.12	10.87	10.87	10.87
d_A, Approach Delay [s/veh]	0.06			0.12			20.03			16.99		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	0.89											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.329

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	18	5	30	10	4	14	13	226	3	10	127	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	5	30	10	4	14	13	226	3	10	127	15
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	8	3	1	4	4	63	1	3	36	4
Total Analysis Volume [veh/h]	20	6	34	11	4	16	15	254	3	11	143	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	766	754	828	818
Degree of Utilization, x	0.08	0.04	0.33	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.25	0.13	1.44	0.79
95th-Percentile Queue Length [ft]	6.35	3.21	35.97	19.64
Approach Delay [s/veh]	8.10	7.98	9.46	8.56
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.94			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	284	0	0	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	284	0	0	158
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	71	0	0	40
Total Analysis Volume [veh/h]	0	0	284	0	0	158
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.28	9.77	0.00	0.00	7.82	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.53		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	284	0	0	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	284	0	0	158
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	71	0	0	40
Total Analysis Volume [veh/h]	0	0	284	0	0	158
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	739	881	857
Degree of Utilization, x	0.00	0.32	0.18

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	1.40	0.67
95th-Percentile Queue Length [ft]	0.00	35.01	16.82
Approach Delay [s/veh]	0.00	9.02	8.15
Approach LOS	A	A	A
Intersection Delay [s/veh]	8.71		
Intersection LOS	A		

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_AM_2023.11.22.vistro
Report File: P:\...\BAM.pdf

Scenario 17 Near-Term (2027) AM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Right	0.791	22.2	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	SWB Left	0.628	22.9	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.639	34.6	C
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.539	18.4	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.744	31.3	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NWB Left	0.558	31.1	C
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	0.011	45.8	E
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NWB Left	0.864	16.2	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	SB Left	0.709	19.5	B
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	SB Left	0.914	115.8	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	0.860	29.4	C
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Left	0.882	32.8	C
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	NB Left	1.352	170.3	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	SWB Right	1.148	74.5	E
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.768	32.0	C
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.681	15.0	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.586	14.7	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NWB Right	0.600	50.9	D
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	NWB Left	0.540	41.7	D
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.655	20.5	C
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	9.915	49.9	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	SEB Left	0.669	48.2	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.575	34.6	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.473	8.2	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.662	42.0	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.391	6.6	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.580	16.1	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.396	5.1	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.515	9.9	A
39	Santa Cruz Ave/Sand Hill Rd	Signalized	HCM 7th Edition	NWB Left	0.715	46.5	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	EB Right	1.103	69.4	F
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Thru	0.646	17.2	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	SB Left	0.733	36.5	D
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.713	17.5	B
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	NWB Right	0.763	20.2	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.998	14.2	B
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWBL2	0.806	14.1	B

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.377	10.0	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NEB Thru	0.005	0.0	A
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NEB Thru	0.005	0.0	A
254	Glenwood Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.834	33.0	D
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.712	18.5	C
292	Ravenswood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	NWB Left	0.031	27.7	D
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.369	9.2	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	NWB Thru	0.003	0.0	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.353	8.9	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	778	1324	217	1006	517
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	778	1324	217	1006	517
Peak Hour Factor	1.0000	0.9550	0.9550	1.0000	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	204	347	54	263	135
Total Analysis Volume [veh/h]	0	815	1386	217	1053	541
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	60	60	0	35	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	55	55	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	53	50	33	33
g / C, Green / Cycle	0.58	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.20	0.39	0.30	0.34
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2334	1995	1268	583
d1, Uniform Delay [s]	9.82	14.28	26.03	27.44
k, delay calibration	0.50	0.50	0.04	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	2.02	0.55	19.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.69	0.83	0.93
d, Delay for Lane Group [s/veh]	10.23	16.30	26.58	46.85
Lane Group LOS	B	B	C	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.88	9.52	9.92	13.78
50th-Percentile Queue Length [ft/ln]	96.94	238.07	247.88	344.45
95th-Percentile Queue Length [veh/ln]	6.98	14.58	15.08	19.87
95th-Percentile Queue Length [ft/ln]	174.49	364.60	376.98	496.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.23	16.30	0.00	26.58	46.85
Movement LOS		B	B		C	D
d_A, Approach Delay [s/veh]	10.23		16.30		33.46	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	22.21					
Intersection LOS	C					
Intersection V/C	0.791					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.50	0.00	32.14
l_p,int, Pedestrian LOS Score for Intersectio	2.912	0.000	2.516
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	1119	686
d_b, Bicycle Delay [s]	8.76	8.75	19.45
l_b,int, Bicycle LOS Score for Intersection	2.232	2.703	1.560
Bicycle LOS	B	B	A

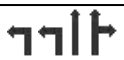
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	22.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	40	1150	2	274	1236	356	12	0	56	205	4	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1150	2	274	1236	356	12	0	56	205	4	2
Peak Hour Factor	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	290	1	69	311	90	3	0	14	52	1	1
Total Analysis Volume [veh/h]	40	1158	2	276	1245	359	12	0	56	206	4	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			2		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	60	60	20	65	65	0	40	0	40	40	40
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	85	85	14	79	79	0	16	0	20	20	20
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	92	92	10	98	98	10	10	14	14
g / C, Green / Cycle	0.04	0.68	0.68	0.07	0.73	0.73	0.07	0.07	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.21	0.08	0.43	0.46	0.01	0.02	0.06	0.06
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1732	1781	2736	1781	1780
c, Capacity [veh/h]	78	2423	1271	257	1357	1257	126	194	179	179
d1, Uniform Delay [s]	63.18	8.78	8.78	62.56	8.95	9.44	58.73	59.52	58.15	58.16
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	0.34	0.65	40.25	1.92	2.45	0.24	0.60	2.32	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.31	0.31	1.07	0.59	0.63	0.10	0.29	0.59	0.59
d, Delay for Lane Group [s/veh]	66.94	9.12	9.42	102.82	10.88	11.90	58.97	60.13	60.48	60.48
Lane Group LOS	E	A	A	F	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	4.39	4.72	5.82	10.86	11.43	0.40	0.94	3.62	3.62
50th-Percentile Queue Length [ft/ln]	35.57	109.82	117.97	145.61	271.39	285.76	9.94	23.42	90.56	90.54
95th-Percentile Queue Length [veh/ln]	2.56	7.83	8.28	10.01	16.26	16.97	0.72	1.69	6.52	6.52
95th-Percentile Queue Length [ft/ln]	64.03	195.75	207.03	250.33	406.47	424.37	17.90	42.16	163.01	162.96

Movement, Approach, & Intersection Results

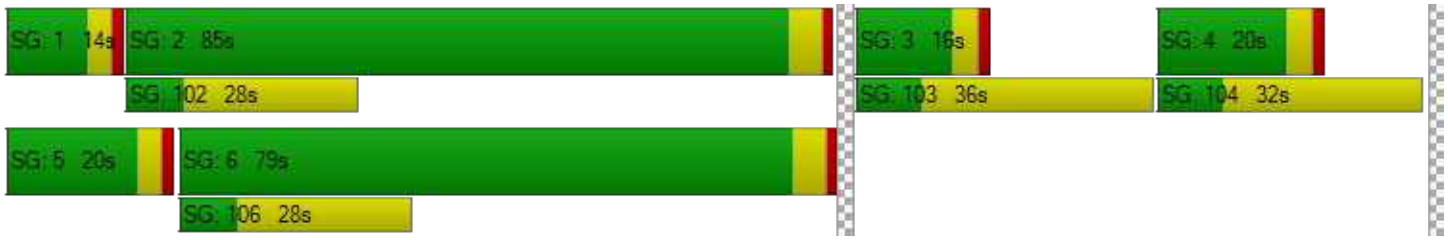
d_M, Delay for Movement [s/veh]	66.94	9.22	9.42	102.82	11.24	11.90	58.97	58.97	60.13	60.48	60.48	60.48
Movement LOS	E	A	A	F	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	11.15			24.81			59.92			60.48		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	22.89											
Intersection LOS	C											
Intersection V/C	0.628											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.07	56.07	56.99	56.99
l_p,int, Pedestrian LOS Score for Intersectio	3.012	3.149	2.376	2.125
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1096	175	234
d_b, Bicycle Delay [s]	11.23	13.81	56.28	52.67
l_b,int, Bicycle LOS Score for Intersection	2.220	3.111	1.672	1.909
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	145	676	64	26	883	396	507	25	174	19	14	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	676	64	26	883	396	507	25	174	19	14	21
Peak Hour Factor	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	171	16	7	224	100	128	6	44	5	4	5
Total Analysis Volume [veh/h]	147	685	65	26	895	401	514	25	176	19	14	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	20	80	80	18	72	72	35	35	35	0	35	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	58	58	15	58	58	37	45	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	103	103	5	94	94	29	29	29	11	11
g / C, Green / Cycle	0.08	0.66	0.66	0.03	0.61	0.61	0.18	0.18	0.18	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.08	0.20	0.20	0.01	0.36	0.37	0.15	0.15	0.11	0.01	0.02
s, saturation flow rate [veh/h]	1781	1870	1806	1781	1870	1677	1781	1789	1554	1781	1677
c, Capacity [veh/h]	150	1236	1193	56	1138	1020	328	330	286	128	120
d1, Uniform Delay [s]	70.92	11.21	11.22	73.79	18.67	18.82	60.79	60.78	58.04	67.56	68.26
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.58	0.65	0.67	2.16	2.31	2.66	3.82	3.79	1.59	0.40	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.31	0.31	0.46	0.60	0.60	0.82	0.82	0.61	0.15	0.29
d, Delay for Lane Group [s/veh]	109.51	11.85	11.89	75.96	20.98	21.48	64.61	64.57	59.63	67.96	69.25
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.43	5.70	5.55	1.05	15.36	14.16	10.64	10.68	6.56	0.73	1.37
50th-Percentile Queue Length [ft/ln]	185.68	142.60	138.68	26.31	383.96	354.02	266.08	266.90	163.90	18.28	34.19
95th-Percentile Queue Length [veh/ln]	11.90	9.62	9.41	1.89	21.79	20.33	15.99	16.03	10.76	1.32	2.46
95th-Percentile Queue Length [ft/ln]	297.42	240.52	235.25	47.36	544.64	508.31	399.84	400.86	268.89	32.90	61.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	109.51	11.87	11.89	75.96	21.10	21.48	64.59	64.57	59.63	67.96	69.25	69.25
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	27.87			22.29			63.37			68.79		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	34.64											
Intersection LOS	C											
Intersection V/C	0.639											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.92	66.92	66.92	66.92
l_p,int, Pedestrian LOS Score for Intersectio	2.855	2.961	2.416	2.012
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	529	423
d_b, Bicycle Delay [s]	33.36	33.32	42.08	48.20
l_b,int, Bicycle LOS Score for Intersection	2.300	2.650	2.739	1.649
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	18.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	591	72	233	812	69	128	41	1	46	21	179
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	591	72	233	812	69	128	41	1	46	21	179
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	156	19	62	214	18	34	11	0	12	6	47
Total Analysis Volume [veh/h]	0	624	76	246	857	73	135	43	1	49	22	189
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	56	34	56	22	56	34	34	34	34	0	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	42	42	16	61	61	25	25
g / C, Green / Cycle	0.46	0.46	0.18	0.67	0.67	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.14	0.25	0.25	0.18	0.16
s, saturation flow rate [veh/h]	1870	1625	1781	1870	1811	1020	1665
c, Capacity [veh/h]	903	750	321	1262	1223	350	504
d1, Uniform Delay [s]	16.33	16.37	35.16	6.37	6.38	29.94	28.22
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.25	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	1.84	3.83	0.85	0.88	2.62	1.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.44	0.77	0.37	0.38	0.51	0.52
d, Delay for Lane Group [s/veh]	17.73	18.22	38.99	7.21	7.26	32.56	29.97
Lane Group LOS	B	B	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.17	4.62	5.31	3.46	3.39	3.77	4.95
50th-Percentile Queue Length [ft/ln]	129.34	115.59	132.87	86.59	84.72	94.30	123.82
95th-Percentile Queue Length [veh/ln]	8.90	8.15	9.10	6.23	6.10	6.79	8.60
95th-Percentile Queue Length [ft/ln]	222.60	203.75	227.39	155.86	152.50	169.74	215.06

Movement, Approach, & Intersection Results

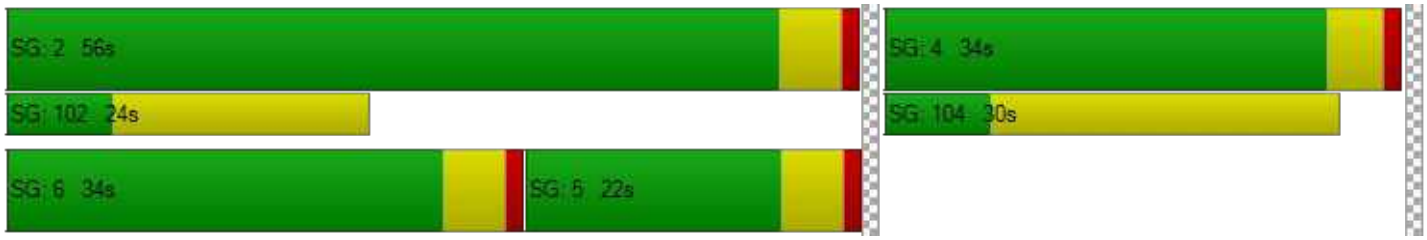
d_M, Delay for Movement [s/veh]	17.73	17.93	18.22	38.99	7.23	7.26	32.56	32.56	32.56	29.97	29.97	29.97
Movement LOS	B	B	B	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.96			13.88			32.56			29.97		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.36											
Intersection LOS	B											
Intersection V/C	0.539											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	28.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	20.78
l_p,int, Pedestrian LOS Score for Intersectio	2.657	2.975	1.826	1.999
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	1130	650	650
d_b, Bicycle Delay [s]	20.79	8.54	20.54	20.53
l_b,int, Bicycle LOS Score for Intersection	2.137	2.530	1.855	1.989
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	95	411	416	446	362	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	411	416	446	362	83
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	110	112	120	97	22
Total Analysis Volume [veh/h]	102	442	447	480	389	89
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing m	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	33	44	44	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	48	48	93	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	5	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	Yes	No	No	No	Yes	
Pedestrian Recall	No	No	No	Yes	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.60
g_i, Effective Green Time [s]	35	75	38	91	49
g / C, Green / Cycle	0.27	0.58	0.29	0.70	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.25	0.26	0.27
s, saturation flow rate [veh/h]	1781	1574	1781	1870	1787
c, Capacity [veh/h]	479	876	520	1311	666
d1, Uniform Delay [s]	36.85	17.67	43.54	7.83	34.91
k, delay calibration	0.50	0.50	0.30	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	2.07	11.03	0.79	6.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.50	0.86	0.37	0.72
d, Delay for Lane Group [s/veh]	37.86	19.74	54.58	8.62	41.43
Lane Group LOS	D	B	D	A	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	8.54	15.00	5.26	13.96
50th-Percentile Queue Length [ft/ln]	66.97	213.38	375.12	131.43	348.89
95th-Percentile Queue Length [veh/ln]	4.82	13.33	21.36	9.02	20.08
95th-Percentile Queue Length [ft/ln]	120.55	333.16	533.93	225.43	502.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.86	19.74	54.58	8.62	41.43	41.43
Movement LOS	D	B	D	A	D	D
d_A, Approach Delay [s/veh]	23.14		30.78		41.43	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	31.26					
Intersection LOS	C					
Intersection V/C	0.744					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	56.33	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.309	2.650	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	1361	623
d_b, Bicycle Delay [s]	36.98	6.76	31.40
l_b,int, Bicycle LOS Score for Intersection	1.560	3.089	2.348
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	10	10	2	127	22	322	29	550	119	224	465	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	10	2	127	22	322	29	550	119	224	465	43
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	1	35	6	88	8	151	33	62	128	12
Total Analysis Volume [veh/h]	11	11	2	140	24	354	32	604	131	246	511	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing m	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	62	25	62	57	25	57	28	62	25	22	57	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	55	38	55	83	38	83	9	55	38	37	83	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	2.5	2.6	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.50	4.60	4.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.50	2.60	2.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	34	34	34	34	4	66	66	22	84	84
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.03	0.51	0.51	0.17	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.12	0.23	0.02	0.17	0.09	0.14	0.15	0.15
s, saturation flow rate [veh/h]	999	1813	1348	1520	1781	3560	1417	1781	1870	1795
c, Capacity [veh/h]	184	471	402	395	50	1803	718	298	1211	1163
d1, Uniform Delay [s]	49.88	35.85	42.06	45.80	62.54	19.06	17.25	52.24	9.50	9.52
k, delay calibration	0.10	0.10	0.10	0.21	0.11	0.50	0.50	0.14	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.02	0.64	13.17	13.24	0.50	0.56	7.39	0.45	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.03	0.41	0.90	0.65	0.33	0.18	0.82	0.23	0.24
d, Delay for Lane Group [s/veh]	50.00	35.88	42.70	58.97	75.78	19.56	17.81	59.63	9.95	10.00
Lane Group LOS	D	D	D	E	E	B	B	E	A	B
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.33	0.32	4.60	12.30	1.23	5.48	2.21	8.30	3.35	3.27
50th-Percentile Queue Length [ft/ln]	8.23	8.02	114.99	307.50	30.64	136.94	55.31	207.56	83.73	81.69
95th-Percentile Queue Length [veh/ln]	0.59	0.58	8.12	18.05	2.21	9.32	3.98	13.03	6.03	5.88
95th-Percentile Queue Length [ft/ln]	14.82	14.44	202.93	451.29	55.14	232.90	99.55	325.69	150.72	147.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.00	35.88	35.88	42.70	42.70	58.97	75.78	19.56	17.81	59.63	9.98	10.00
Movement LOS	D	D	D	D	D	E	E	B	B	E	A	B
d_A, Approach Delay [s/veh]	42.35			53.82			21.61			25.17		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	31.09											
Intersection LOS	C											
Intersection V/C	0.558											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.45	54.45	54.45	54.45
l_p,int, Pedestrian LOS Score for Intersectio	1.985	2.252	2.939	2.736
Crosswalk LOS	A	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	777	1208
d_b, Bicycle Delay [s]	35.95	36.22	24.48	10.39
l_b,int, Bicycle LOS Score for Intersection	1.599	2.414	2.192	2.223
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	45.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	1	0	5	7	0	45	15	613	6	41	579	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	5	7	0	45	15	613	6	41	579	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	2	0	13	4	170	2	11	161	3
Total Analysis Volume [veh/h]	1	0	6	8	0	50	17	681	7	46	643	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

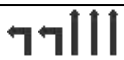
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.08	0.00	0.11	0.02	0.01	0.00	0.05	0.01	0.00
d_M, Delay for Movement [s/veh]	45.84	35.35	12.96	44.10	37.78	15.79	8.93	0.00	0.00	9.19	0.00	0.00
Movement LOS	E	E	B	E	E	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.70	0.70	0.70	0.06	0.00	0.00	0.16	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.84	1.84	1.84	17.39	17.39	17.39	1.39	0.00	0.00	4.01	0.00	0.00
d_A, Approach Delay [s/veh]	17.66			19.70			0.22			0.60		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	1.25											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

Intersection Setup

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	1010	81	1077	3348	148	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1010	81	1077	3348	148	388
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	273	22	291	906	40	105
Total Analysis Volume [veh/h]	1093	88	1166	3623	160	420
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	113.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	60	144	84	144	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	5
Pedestrian Clearance [s]	35	13	0	13	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	29	29	39	71	11	54
g / C, Green / Cycle	0.31	0.31	0.42	0.77	0.12	0.59
(v / s)_i Volume / Saturation Flow Rate	0.21	0.06	0.34	0.71	0.05	0.10
s, saturation flow rate [veh/h]	5094	1570	3459	5094	3459	4220
c, Capacity [veh/h]	1588	489	1456	3932	418	2332
d1, Uniform Delay [s]	27.78	23.10	23.31	8.31	37.35	10.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.17	1.06	1.13	0.58	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.18	0.80	0.92	0.38	0.18
d, Delay for Lane Group [s/veh]	28.32	23.28	24.37	9.43	37.93	10.28
Lane Group LOS	C	C	C	A	D	B
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.38	1.29	9.70	8.01	1.66	1.30
50th-Percentile Queue Length [ft/ln]	159.43	32.21	242.57	200.24	41.46	32.58
95th-Percentile Queue Length [veh/ln]	10.52	2.32	14.81	12.65	2.98	2.35
95th-Percentile Queue Length [ft/ln]	262.97	57.98	370.29	316.27	74.62	58.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.32	23.28	24.37	9.43	37.93	10.28
Movement LOS	C	C	C	A	D	B
d_A, Approach Delay [s/veh]	27.95		13.07		17.91	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	16.18					
Intersection LOS	B					
Intersection V/C	0.864					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.46	0.00	37.46
l_p,int, Pedestrian LOS Score for Intersectio	3.864	0.000	2.895
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1108	3001	630
d_b, Bicycle Delay [s]	9.15	11.52	21.59
l_b,int, Bicycle LOS Score for Intersection	2.209	4.194	1.670
Bicycle LOS	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	93	208	414	10	28	27	62	733	161	829	2172	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	208	414	10	28	27	62	733	161	829	2172	41
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	55	110	3	7	7	17	195	43	221	579	11
Total Analysis Volume [veh/h]	99	222	441	11	30	29	66	781	172	884	2316	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing m	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	149	50	25	50	149
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	75	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	91	91	91	91	91	91	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	12	16	41	1	6	6	59	34	34	59	50	50
g / C, Green / Cycle	0.13	0.18	0.44	0.01	0.06	0.06	0.64	0.37	0.37	0.64	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.10	0.10	0.01	0.01	0.02	0.37	0.15	0.11	0.49	0.45	0.03
s, saturation flow rate [veh/h]	797	2249	4220	937	3560	1552	181	5094	1589	1796	5094	1589
c, Capacity [veh/h]	107	396	1878	13	226	98	304	1885	588	1159	2783	868
d1, Uniform Delay [s]	39.12	34.48	15.75	45.09	40.50	40.91	14.59	21.45	20.37	11.10	17.28	9.69
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.17	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.83	1.24	0.06	85.17	0.26	1.64	0.57	0.15	0.27	1.07	0.69	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.56	0.23	0.87	0.13	0.29	0.22	0.41	0.29	0.76	0.83	0.05
d, Delay for Lane Group [s/veh]	63.96	35.72	15.81	130.26	40.77	42.55	15.17	21.60	20.64	12.17	17.97	9.72
Lane Group LOS	E	D	B	F	D	D	B	C	C	B	B	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.85	2.24	1.78	0.55	0.33	0.68	0.24	4.05	2.57	4.18	12.41	0.40
50th-Percentile Queue Length [ft/ln]	71.26	55.93	44.57	13.75	8.29	16.91	5.97	101.35	64.29	104.51	310.13	9.92
95th-Percentile Queue Length [veh/ln]	5.13	4.03	3.21	0.99	0.60	1.22	0.43	7.30	4.63	7.53	18.18	0.71
95th-Percentile Queue Length [ft/ln]	128.27	100.68	80.22	24.76	14.92	30.43	10.75	182.43	115.72	188.13	454.54	17.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.96	35.72	15.81	130.26	40.77	42.55	15.17	21.60	20.64	12.17	17.97	9.72
Movement LOS	E	D	B	F	D	D	B	C	C	B	B	A
d_A, Approach Delay [s/veh]	27.87			55.57			21.02			16.28		
Approach LOS	C			E			C			B		
d_I, Intersection Delay [s/veh]	19.50											
Intersection LOS	B											
Intersection V/C	0.709											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.19	0.00	37.19	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.561	0.000	3.162	0.000
Crosswalk LOS	D	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	822	675	3257	1989
d_b, Bicycle Delay [s]	15.87	20.06	18.07	0.00
l_b,int, Bicycle LOS Score for Intersection	2.188	1.617	2.120	3.344
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	115.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.914

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	125	690	74	495	784	18	59	16	73	16	6	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	690	74	495	784	18	59	16	73	16	6	155
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	177	19	127	201	5	15	4	19	4	2	40
Total Analysis Volume [veh/h]	128	707	76	507	803	18	60	16	75	16	6	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing m	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	7	49	49	7	49	49	34	34	34	34	34	34
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	56	49	49	56	49	49	26	27
g / C, Green / Cycle	0.63	0.55	0.55	0.63	0.55	0.55	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.19	0.48	0.48	0.71	0.42	0.42	0.26	0.19
s, saturation flow rate [veh/h]	678	837	801	712	984	972	572	947
c, Capacity [veh/h]	309	460	440	266	541	534	223	301
d1, Uniform Delay [s]	16.06	17.43	17.58	38.29	15.70	15.76	32.01	28.23
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.26	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.04	19.23	20.83	421.42	9.75	10.06	8.37	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.87	0.87	1.91	0.76	0.77	0.68	0.60
d, Delay for Lane Group [s/veh]	20.10	36.66	38.40	459.71	25.46	25.82	40.38	30.67
Lane Group LOS	C	D	D	F	C	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.26	8.47	8.41	33.53	7.40	7.41	3.71	3.53
50th-Percentile Queue Length [ft/ln]	31.45	211.82	210.29	838.17	184.89	185.14	92.85	88.26
95th-Percentile Queue Length [veh/ln]	2.26	13.25	13.17	59.27	11.86	11.87	6.69	6.35
95th-Percentile Queue Length [ft/ln]	56.61	331.17	329.20	1481.82	296.38	296.71	167.13	158.87

Movement, Approach, & Intersection Results

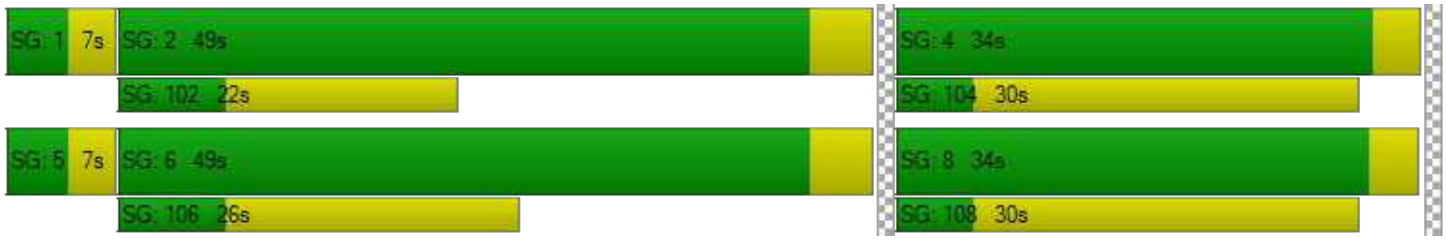
d_M, Delay for Movement [s/veh]	20.10	37.42	38.40	459.71	25.63	25.82	40.38	40.38	40.38	30.67	30.67	30.67
Movement LOS	C	D	D	F	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	35.07			191.36			40.38			30.67		
Approach LOS	D			F			D			C		
d_I, Intersection Delay [s/veh]	115.80											
Intersection LOS	F											
Intersection V/C	0.914											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.44	36.44	34.66	34.66
l_p,int, Pedestrian LOS Score for Intersectio	3.097	2.906	1.942	2.648
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1000	685	689
d_b, Bicycle Delay [s]	11.32	11.46	19.51	19.43
l_b,int, Bicycle LOS Score for Intersection	2.311	2.655	1.809	1.858
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	73	674	919	49	56	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	674	919	49	56	83
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	174	238	13	14	21
Total Analysis Volume [veh/h]	75	697	950	51	58	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing m	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	130	130	130	30	30
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	130	114	114	30	30
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	133	117	117	20	20
g / C, Green / Cycle	0.08	0.83	0.73	0.73	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.09	0.44	0.60	0.61	0.03	0.11
s, saturation flow rate [veh/h]	797	1593	837	820	1704	803
c, Capacity [veh/h]	65	1324	611	599	213	101
d1, Uniform Delay [s]	73.59	4.06	14.44	14.90	63.49	68.43
k, delay calibration	0.21	0.50	0.50	0.50	0.04	0.09
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	120.19	1.50	11.62	12.99	0.25	15.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.53	0.82	0.84	0.27	0.86
d, Delay for Lane Group [s/veh]	193.78	5.56	26.06	27.89	63.74	83.77
Lane Group LOS	F	A	C	C	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.82	2.85	12.70	13.23	2.18	3.89
50th-Percentile Queue Length [ft/ln]	120.54	71.27	317.47	330.74	54.48	97.18
95th-Percentile Queue Length [veh/ln]	8.68	5.13	18.54	19.19	3.92	7.00
95th-Percentile Queue Length [ft/ln]	216.97	128.29	463.58	479.86	98.07	174.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	193.78	5.56	26.92	27.89	63.74	83.77
Movement LOS	F	A	C	C	E	F
d_A, Approach Delay [s/veh]	23.85		26.97		75.70	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	29.37					
Intersection LOS	C					
Intersection V/C	0.860					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.31	71.31	69.44
l_p,int, Pedestrian LOS Score for Intersectio	2.798	2.730	2.055
Crosswalk LOS	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1574	1374	337
d_b, Bicycle Delay [s]	3.65	7.85	55.36
l_b,int, Bicycle LOS Score for Intersection	2.197	2.385	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	731	580	48	1011	446	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	731	580	48	1011	446	49
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	192	152	13	266	117	13
Total Analysis Volume [veh/h]	769	610	50	1063	469	52
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	135	135	21	135	30	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	115	115	15	130	30	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	117	117	6	126	27	27
g / C, Green / Cycle	0.73	0.73	0.04	0.79	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.48	0.40	0.03	0.67	0.17	0.17
s, saturation flow rate [veh/h]	1593	1518	1781	1593	1406	1743
c, Capacity [veh/h]	1166	1111	66	1255	235	292
d1, Uniform Delay [s]	11.13	9.34	76.47	10.86	66.58	66.58
k, delay calibration	0.50	0.50	0.04	0.50	0.36	0.36
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.93	1.95	6.52	7.20	47.11	42.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.55	0.76	0.85	0.99	0.99
d, Delay for Lane Group [s/veh]	14.06	11.29	82.99	18.06	113.68	108.67
Lane Group LOS	B	B	F	B	F	F
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.85	9.09	2.15	11.02	12.60	15.21
50th-Percentile Queue Length [ft/ln]	171.14	227.13	53.81	275.45	314.94	380.31
95th-Percentile Queue Length [veh/ln]	11.14	14.03	3.87	16.46	18.42	21.61
95th-Percentile Queue Length [ft/ln]	278.41	350.71	96.85	411.54	460.47	540.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.06	11.29	82.99	18.06	111.19	108.67
Movement LOS	B	B	F	B	F	F
d_A, Approach Delay [s/veh]	12.84		20.97		110.91	
Approach LOS	B		C		F	
d_I, Intersection Delay [s/veh]	32.80					
Intersection LOS	C					
Intersection V/C	0.882					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.351
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1386	1574	335
d_b, Bicycle Delay [s]	7.59	3.64	55.54
l_b,int, Bicycle LOS Score for Intersection	2.697	2.478	2.419
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	170.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.352

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	175	1035	276	66	1358	20	22	136	364	349	97	123
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	1035	276	66	1358	20	22	136	364	349	97	123
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	281	75	18	368	5	6	37	99	95	26	33
Total Analysis Volume [veh/h]	190	1123	299	72	1473	22	24	148	395	379	105	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	10	59	59	7	56	56	11	33	33	31	53	53
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	7	54	54	4	51	51	3	29	29	28	53	53
g / C, Green / Cycle	0.05	0.41	0.41	0.03	0.39	0.39	0.02	0.22	0.22	0.22	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.11	0.27	0.28	0.04	0.62	0.62	0.02	0.09	0.26	0.24	0.13	0.19
s, saturation flow rate [veh/h]	1781	3560	1643	1781	1593	829	1528	1604	1531	1547	837	686
c, Capacity [veh/h]	96	1474	680	55	623	324	34	357	341	336	343	281
d1, Uniform Delay [s]	61.50	30.64	30.88	63.00	39.59	39.59	63.13	43.25	49.99	50.89	25.89	27.85
k, delay calibration	0.16	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.50	0.08	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	453.39	2.29	5.18	151.51	267.85	275.54	23.19	0.28	98.78	64.96	0.50	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.98	0.66	0.67	1.31	1.58	1.58	0.70	0.41	1.16	1.13	0.31	0.47
d, Delay for Lane Group [s/veh]	514.89	32.93	36.05	214.51	307.44	315.13	86.31	43.54	148.77	115.85	26.39	29.08
Lane Group LOS	F	C	D	F	F	F	F	D	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.20	12.28	12.20	4.13	33.04	35.09	1.01	4.13	20.30	8.48	2.26	3.11
50th-Percentile Queue Length [ft/ln]	380.05	306.97	304.88	103.37	825.97	877.20	25.25	103.32	507.51	211.97	56.56	77.86
95th-Percentile Queue Length [veh/ln]	24.96	18.03	17.92	7.44	53.69	56.75	1.82	7.44	29.95	14.04	4.07	5.61
95th-Percentile Queue Length [ft/ln]	624.07	450.64	448.06	186.07	1342.31	1418.77	45.45	185.98	748.75	350.97	101.81	140.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	514.89	33.36	36.05	214.51	310.00	315.13	86.31	43.54	148.77	115.85	26.39	29.08
Movement LOS	F	C	D	F	F	F	F	D	F	F	C	C
d_A, Approach Delay [s/veh]	90.62			305.68			118.66			81.92		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	170.27											
Intersection LOS	F											
Intersection V/C	1.352											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	49.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	25.23	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.330	2.911	2.364	2.540
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	831	785	446	754
d_b, Bicycle Delay [s]	22.24	24.02	39.33	25.41
l_b,int, Bicycle LOS Score for Intersection	2.446	2.421	2.495	2.578
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	74.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.148

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	90	1112	968	681	311	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	1112	968	681	311	56
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	293	255	180	82	15
Total Analysis Volume [veh/h]	95	1173	1021	718	328	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		2		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	12	60	48	48	20	20
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	8	47	36	36	33	33
g / C, Green / Cycle	0.09	0.53	0.40	0.40	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.07	0.45	0.37	0.58	0.35	0.04
s, saturation flow rate [veh/h]	1312	2623	2792	1227	937	1569
c, Capacity [veh/h]	112	1381	1123	494	343	573
d1, Uniform Delay [s]	40.40	18.17	25.23	26.38	27.73	18.72
k, delay calibration	0.04	0.16	0.15	0.50	0.33	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.71	2.26	4.47	215.73	30.55	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.85	0.91	1.45	0.96	0.10
d, Delay for Lane Group [s/veh]	47.11	20.43	29.70	242.11	58.28	18.75
Lane Group LOS	D	C	C	F	E	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.24	9.89	10.18	39.16	9.42	0.80
50th-Percentile Queue Length [ft/ln]	56.12	247.29	254.44	978.97	235.41	19.88
95th-Percentile Queue Length [veh/ln]	4.04	15.05	15.41	61.12	14.45	1.43
95th-Percentile Queue Length [ft/ln]	101.02	376.24	385.24	1527.96	361.22	35.78

Movement, Approach, & Intersection Results

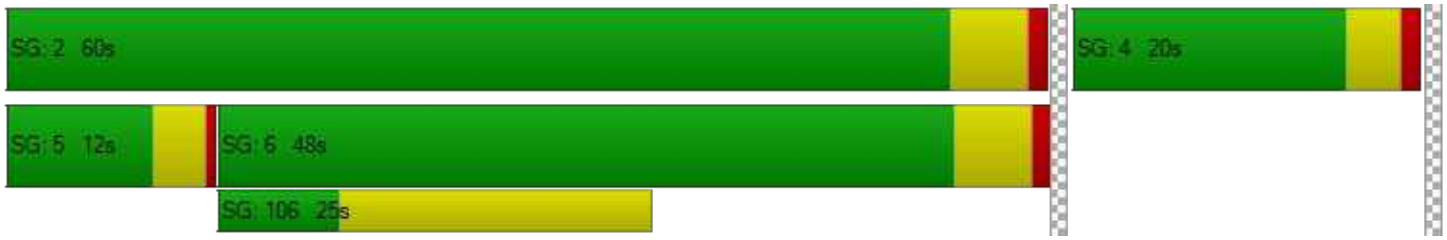
d_M, Delay for Movement [s/veh]	47.11	20.43	29.70	242.11	58.28	18.75
Movement LOS	D	C	C	F	E	B
d_A, Approach Delay [s/veh]	22.43		117.40		52.26	
Approach LOS	C		F		D	
d_I, Intersection Delay [s/veh]	74.49					
Intersection LOS	E					
Intersection V/C	1.148					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.48
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.329
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1216	949	353
d_b, Bicycle Delay [s]	6.92	12.40	30.41
l_b,int, Bicycle LOS Score for Intersection	2.606	2.994	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	32.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	18	770	8	36	780	46	40	4	15	78	6	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	770	8	36	780	46	40	4	15	78	6	133
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	199	2	9	202	12	10	1	4	20	2	34
Total Analysis Volume [veh/h]	19	796	8	37	807	48	41	4	16	81	6	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	67	67	5	69	9	9	9	17	17
g / C, Green / Cycle	0.02	0.58	0.58	0.04	0.60	0.08	0.08	0.08	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.04	0.56	0.02	0.02	0.01	0.09	0.12
s, saturation flow rate [veh/h]	937	1422	1863	937	1527	937	1364	1337	937	1182
c, Capacity [veh/h]	15	820	1075	37	918	75	109	107	138	174
d1, Uniform Delay [s]	56.84	13.68	13.69	55.42	20.89	49.87	49.87	49.39	45.95	47.80
k, delay calibration	0.11	0.23	0.23	0.11	0.30	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	200.26	0.74	0.57	65.29	11.67	1.68	1.15	0.64	3.91	9.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.28	0.42	0.42	0.99	0.93	0.25	0.24	0.15	0.59	0.83
d, Delay for Lane Group [s/veh]	257.10	14.43	14.26	120.71	32.55	51.56	51.02	50.03	49.86	57.29
Lane Group LOS	F	B	B	F	C	D	D	D	D	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.26	5.19	6.75	1.76	22.65	0.55	0.78	0.46	2.34	4.50
50th-Percentile Queue Length [ft/ln]	31.58	129.77	168.86	44.05	566.33	13.77	19.53	11.59	58.42	112.59
95th-Percentile Queue Length [veh/ln]	2.27	8.93	11.02	3.17	30.46	0.99	1.41	0.83	4.21	7.98
95th-Percentile Queue Length [ft/ln]	56.85	223.19	275.41	79.29	761.47	24.79	35.16	20.86	105.16	199.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	257.10	14.33	14.26	120.71	32.55	32.55	51.26	51.02	50.03	49.86	57.29	57.29
Movement LOS	F	B	B	F	C	C	D	D	D	D	E	E
d_A, Approach Delay [s/veh]	19.94			36.21			50.92			54.61		
Approach LOS	B			D			D			D		
d_I, Intersection Delay [s/veh]	32.03											
Intersection LOS	C											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.21	47.21	47.21	47.21
l_p,int, Pedestrian LOS Score for Intersectio	2.494	2.718	2.154	2.026
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	347	347	520	520
d_b, Bicycle Delay [s]	39.48	39.50	31.60	31.60
l_b,int, Bicycle LOS Score for Intersection	2.239	3.031	1.660	1.931
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	17	638	4	5	695	128	167	3	38	3	7	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	638	4	5	695	128	167	3	38	3	7	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	168	1	1	183	34	44	1	10	1	2	1
Total Analysis Volume [veh/h]	18	672	4	5	732	135	176	3	40	3	7	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing m	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			59			13			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	94	94	94	94	94	94	36	36	36	0	36	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	99	99	99	99	23	23
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.36	0.01	0.48	0.16	0.01
s, saturation flow rate [veh/h]	638	1868	763	1803	1340	1747
c, Capacity [veh/h]	386	1418	515	1369	288	344
d1, Uniform Delay [s]	15.55	5.89	10.29	7.24	52.07	44.23
k, delay calibration	0.50	0.50	0.50	0.50	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	1.15	0.03	2.24	7.58	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.48	0.01	0.63	0.76	0.04
d, Delay for Lane Group [s/veh]	15.78	7.04	10.33	9.49	59.65	44.28
Lane Group LOS	B	A	B	A	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.30	6.85	0.06	10.55	7.60	0.39
50th-Percentile Queue Length [ft/ln]	7.44	171.14	1.56	263.83	190.09	9.64
95th-Percentile Queue Length [veh/ln]	0.54	11.14	0.11	15.88	12.13	0.69
95th-Percentile Queue Length [ft/ln]	13.40	278.41	2.81	397.03	303.14	17.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.78	7.04	7.04	10.33	9.49	9.49	59.65	59.65	59.65	44.28	44.28	44.28
Movement LOS	B	A	A	B	A	A	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	7.27			9.49			59.65			44.28		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	15.01											
Intersection LOS	B											
Intersection V/C	0.681											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.39	54.39	54.39	54.39
l_p,int, Pedestrian LOS Score for Intersectio	2.360	2.768	1.943	1.750
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1385	1385	491	491
d_b, Bicycle Delay [s]	6.17	6.33	37.19	37.07
l_b,int, Bicycle LOS Score for Intersection	2.705	2.998	1.921	1.583
Bicycle LOS	B	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	4	504	73	35	697	1	27	69	12	97	108	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	504	73	35	697	1	27	69	12	97	108	114
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	135	19	9	186	0	7	18	3	26	29	30
Total Analysis Volume [veh/h]	4	538	78	37	745	1	29	74	13	104	115	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing m	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			32			7			13		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	64	64	64	64	64	64	26	26	26	0	26	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	63	63	63	63	19	19	19	19
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.01	0.34	0.05	0.40	0.03	0.05	0.08	0.14
s, saturation flow rate [veh/h]	715	1819	806	1869	1138	1802	1282	1680
c, Capacity [veh/h]	424	1270	505	1304	143	380	267	355
d1, Uniform Delay [s]	12.17	6.21	10.57	6.84	41.18	29.43	35.73	32.61
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	1.33	0.28	1.83	0.69	0.30	0.93	2.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.49	0.07	0.57	0.20	0.23	0.39	0.67
d, Delay for Lane Group [s/veh]	12.21	7.54	10.85	8.66	41.86	29.73	36.66	34.79
Lane Group LOS	B	A	B	A	D	C	D	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.05	5.04	0.40	6.75	0.65	1.59	2.18	4.92
50th-Percentile Queue Length [ft/ln]	1.16	125.98	9.89	168.85	16.26	39.78	54.59	123.01
95th-Percentile Queue Length [veh/ln]	0.08	8.72	0.71	11.02	1.17	2.86	3.93	8.56
95th-Percentile Queue Length [ft/ln]	2.08	218.02	17.81	275.40	29.27	71.60	98.26	213.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.21	7.54	7.54	10.85	8.66	8.66	41.86	29.73	29.73	36.66	34.79	34.79
Movement LOS	B	A	A	B	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	7.57			8.77			32.77			35.36		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	14.74											
Intersection LOS	B											
Intersection V/C	0.586											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersectio	2.489	2.471	2.009	2.136
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1331	1331	487	487
d_b, Bicycle Delay [s]	5.11	5.12	25.86	25.94
l_b,int, Bicycle LOS Score for Intersection	2.583	2.852	1.751	2.122
Bicycle LOS	B	C	A	B

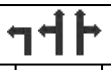
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	50.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	32	206	102	356	133	409	84	261	144	255	225	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	32	206	102	356	133	409	84	261	144	255	225	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	54	27	93	35	107	22	68	38	66	59	3
Total Analysis Volume [veh/h]	33	215	106	371	139	426	88	272	150	266	234	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10			2			10			2		
v_di, Inbound Pedestrian Volume crossing m	10			2			10			2		
v_co, Outbound Pedestrian Volume crossing	5			3			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			3			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	17			17			6			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	22	22	22	74	74	74	16	16	16	16	19	19	19
g / C, Green / Cycle	0.15	0.15	0.15	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.11	0.07	0.14	0.14	0.27	0.05	0.08	0.08	0.09	0.09	0.09	0.09
s, saturation flow rate [veh/h]	1781	1870	1470	1781	1828	1558	1781	1870	1813	1524	1781	1818	1832
c, Capacity [veh/h]	265	278	218	885	909	775	189	199	192	162	223	228	230
d1, Uniform Delay [s]	55.35	61.38	58.20	22.11	22.03	25.89	62.98	65.00	65.06	65.19	63.32	63.29	63.31
k, delay calibration	0.11	0.15	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	6.33	1.67	0.82	0.77	2.80	1.78	5.41	5.83	8.85	5.12	4.94	4.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.77	0.49	0.29	0.28	0.55	0.47	0.74	0.75	0.80	0.75	0.75	0.75
d, Delay for Lane Group [s/veh]	55.56	67.71	59.87	22.93	22.80	28.69	64.76	70.40	70.89	74.04	68.44	68.23	68.29
Lane Group LOS	E	E	E	C	C	C	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.11	8.40	3.80	5.64	5.63	11.26	3.27	5.80	5.71	5.25	6.56	6.65	6.73
50th-Percentile Queue Length [ft/ln]	27.76	210.00	95.00	140.96	140.85	281.50	81.80	144.9	142.8	131.2	163.96	166.31	168.37
95th-Percentile Queue Length [veh/ln]	2.00	13.15	6.84	9.53	9.53	16.76	5.89	9.74	9.63	9.01	10.76	10.88	10.99
95th-Percentile Queue Length [ft/ln]	49.97	328.83	170.99	238.32	238.17	419.07	147.2	243.6	240.7	225.1	268.96	272.06	274.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.56	67.71	59.87	22.89	22.80	28.69	64.76	70.63	73.82	68.36	68.27	68.29
Movement LOS	E	E	E	C	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	64.23			25.52			70.49			68.32		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	50.85											
Intersection LOS	D											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersectio	2.300	2.741	4.260	2.566
Crosswalk LOS	B	B	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.43	39.69	50.30	44.75
l_b,int, Bicycle LOS Score for Intersection	2.144	3.104	2.805	1.983
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	41.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	395	53	16	466	28	160	104	17	99	113	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	395	53	16	466	28	160	104	17	99	113	63
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	110	15	4	129	8	44	29	5	28	31	18
Total Analysis Volume [veh/h]	23	439	59	18	518	31	178	116	19	110	126	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			19			18			18		
v_di, Inbound Pedestrian Volume crossing m	18			18			19			18		
v_co, Outbound Pedestrian Volume crossing	25			20			26			21		
v_ci, Inbound Pedestrian Volume crossing mi	26			21			25			20		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	52			17			11			37		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	4	4	5	5	5	4	4	4	4	4	4
Maximum Green [s]	20	71	71	20	71	71	30	26	30	26	30	26
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	44	44	10	44	44	28	28	28	28	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.70	0.00	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	79	71	79	71	26	26	30	30
g / C, Green / Cycle	0.53	0.48	0.53	0.48	0.17	0.17	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.02	0.30	0.10	0.08	0.06	0.12
s, saturation flow rate [veh/h]	927	1801	961	1842	1781	1776	1781	1628
c, Capacity [veh/h]	370	864	399	878	311	310	359	328
d1, Uniform Delay [s]	20.60	27.90	19.76	29.09	56.41	54.95	50.65	54.03
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	2.80	0.05	3.36	7.48	4.41	2.21	7.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.58	0.05	0.63	0.57	0.44	0.31	0.60
d, Delay for Lane Group [s/veh]	20.92	30.70	19.81	32.45	63.89	59.35	52.86	61.86
Lane Group LOS	C	C	B	C	E	E	D	E
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	13.50	0.31	15.50	6.83	4.95	3.78	7.48
50th-Percentile Queue Length [ft/ln]	10.49	337.57	7.67	387.41	170.71	123.68	94.54	187.07
95th-Percentile Queue Length [veh/ln]	0.76	19.53	0.55	21.95	11.11	8.60	6.81	11.97
95th-Percentile Queue Length [ft/ln]	18.88	488.23	13.80	548.81	277.85	214.88	170.17	299.23

Movement, Approach, & Intersection Results

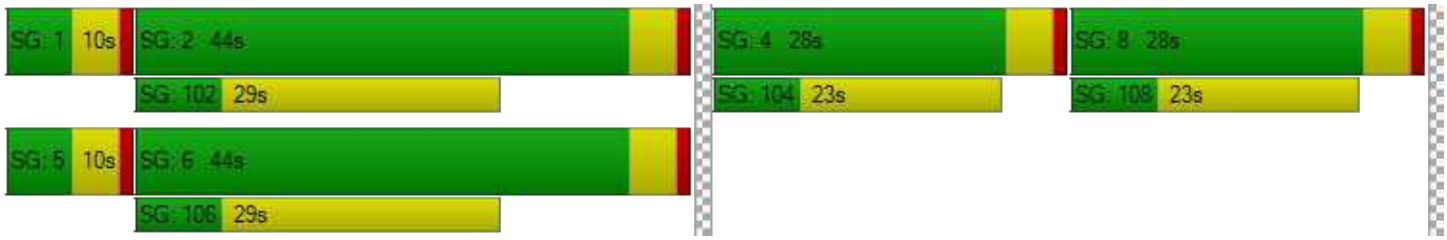
d_M, Delay for Movement [s/veh]	20.92	30.70	30.70	19.81	32.45	32.45	63.89	59.35	59.35	52.86	61.86	61.86
Movement LOS	C	C	C	B	C	C	E	E	E	D	E	E
d_A, Approach Delay [s/veh]	30.27			32.05			61.93			58.63		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	41.75											
Intersection LOS	D											
Intersection V/C	0.540											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.88	63.88	63.88	63.88
l_p,int, Pedestrian LOS Score for Intersectio	2.382	2.333	2.145	2.109
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	528	313	313
d_b, Bicycle Delay [s]	41.43	40.70	53.28	53.99
l_b,int, Bicycle LOS Score for Intersection	2.419	2.495	2.076	2.065
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	10	271	71	13	339	72	62	132	8	87	149	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	271	71	13	339	72	62	132	8	87	149	49
Peak Hour Factor	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	81	21	4	101	21	18	39	2	26	44	15
Total Analysis Volume [veh/h]	12	323	85	15	404	86	74	157	10	104	178	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	13			32			14			33		
v_di, Inbound Pedestrian Volume crossing m	14			33			13			32		
v_co, Outbound Pedestrian Volume crossing	12			26			25			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			25			26			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			39			21			32		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	59	59	59	59
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	21	21	12	14
g / C, Green / Cycle	0.35	0.35	0.20	0.24
(v / s)_i Volume / Saturation Flow Rate	0.24	0.29	0.13	0.19
s, saturation flow rate [veh/h]	1778	1749	1829	1789
c, Capacity [veh/h]	685	675	361	436
d1, Uniform Delay [s]	16.42	17.56	22.00	20.94
k, delay calibration	0.11	0.13	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.90	2.07	2.14	2.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.75	0.67	0.78
d, Delay for Lane Group [s/veh]	17.32	19.63	24.15	23.24
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	Yes
50th-Percentile Queue Length [veh/ln]	4.58	6.06	3.13	4.28
50th-Percentile Queue Length [ft/ln]	114.42	151.43	78.29	106.91
95th-Percentile Queue Length [veh/ln]	8.09	10.09	5.64	7.67
95th-Percentile Queue Length [ft/ln]	202.14	252.34	140.91	191.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.32	17.32	17.32	19.63	19.63	19.63	24.15	24.15	24.15	23.24	23.24	23.24
Movement LOS	B	B	B	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.32			19.63			24.15			23.24		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.52											
Intersection LOS	C											
Intersection V/C	0.655											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.53	21.19	19.53	19.53
l_p,int, Pedestrian LOS Score for Intersectio	2.080	2.077	1.924	1.998
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1017	1017	1017
d_b, Bicycle Delay [s]	7.23	7.27	7.21	7.25
l_b,int, Bicycle LOS Score for Intersection	2.253	2.393	1.957	2.121
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	49.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	9.915

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	4	16	8	117	10	250	19	864	126	147	1629	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	8	117	10	250	19	864	126	147	1629	26
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	31	3	65	5	226	33	38	426	7
Total Analysis Volume [veh/h]	4	17	8	122	10	262	20	904	132	154	1704	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	40	0	0	40	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	40	0	0	40	0	15	85	0	25	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	34	34	34	34	6	85	85	15	94	94
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.04	0.57	0.57	0.10	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	9.31	0.17	0.01	0.25	0.08	0.09	0.32	0.32
s, saturation flow rate [veh/h]	458	1589	14	1564	1781	3560	1556	1781	3560	1853
c, Capacity [veh/h]	132	359	49	353	67	2023	884	176	2242	1167
d1, Uniform Delay [s]	47.64	45.16	73.59	53.81	69.31	9.53	8.25	64.15	5.53	5.53
k, delay calibration	0.11	0.11	0.50	0.16	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	0.02	807.00	4.60	2.44	0.72	0.36	12.40	0.82	1.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.02	2.67	0.74	0.30	0.45	0.15	0.87	0.51	0.51
d, Delay for Lane Group [s/veh]	48.19	45.19	880.59	58.41	71.75	10.25	8.61	76.55	6.35	7.11
Lane Group LOS	D	D	F	E	E	B	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.66	0.24	12.99	9.66	0.79	4.68	1.26	6.23	3.86	4.27
50th-Percentile Queue Length [ft/ln]	16.45	6.10	324.67	241.49	19.71	116.99	31.60	155.81	96.41	106.72
95th-Percentile Queue Length [veh/ln]	1.18	0.44	23.38	14.76	1.42	8.23	2.27	10.33	6.94	7.66
95th-Percentile Queue Length [ft/ln]	29.62	10.98	584.41	368.92	35.47	205.69	56.87	258.17	173.55	191.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.19	48.19	45.19	880.59	880.59	58.41	71.75	10.25	8.61	76.55	6.60	7.11
Movement LOS	D	D	D	F	F	E	E	B	A	E	A	A
d_A, Approach Delay [s/veh]	47.36			333.86			11.21			12.33		
Approach LOS	D			F			B			B		
d_I, Intersection Delay [s/veh]	49.94											
Intersection LOS	D											
Intersection V/C	9.915											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.40	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.979	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1040	1173
d_b, Bicycle Delay [s]	44.85	44.94	17.29	12.84
l_b,int, Bicycle LOS Score for Intersection	1.607	2.210	2.431	2.596
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	48.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	305	176	93	55	234	37	111	733	37	178	1015	295
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	305	176	93	55	234	37	111	733	37	178	1015	295
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	47	25	15	63	10	30	197	10	48	273	79
Total Analysis Volume [veh/h]	328	189	100	59	252	40	119	788	40	191	1091	317
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			2			5			3		
v_di, Inbound Pedestrian Volume crossing m	5			3			5			2		
v_co, Outbound Pedestrian Volume crossing	2			6			6			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			6			6			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	18			15			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	32	0	0	32	0	15	71	0	15	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	28	28	28	26	26	26	12	70	70	11	70	70
g / C, Green / Cycle	0.19	0.19	0.19	0.17	0.17	0.17	0.08	0.47	0.47	0.07	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.07	0.03	0.13	0.03	0.07	0.22	0.03	0.11	0.31	0.21
s, saturation flow rate [veh/h]	1781	1844	1512	1781	1870	1526	1781	3560	1533	1781	3560	1540
c, Capacity [veh/h]	331	343	281	305	320	261	137	1666	717	131	1657	716
d1, Uniform Delay [s]	58.03	58.01	53.08	53.35	59.62	52.92	66.60	18.36	15.30	67.69	20.85	18.18
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.75	3.59	0.76	0.31	4.32	0.27	14.78	0.97	0.15	213.29	2.07	1.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.77	0.36	0.19	0.79	0.15	0.87	0.47	0.06	1.45	0.66	0.44
d, Delay for Lane Group [s/veh]	61.78	61.59	53.84	53.66	63.94	53.19	81.38	19.32	15.45	280.98	22.91	20.16
Lane Group LOS	E	E	D	D	E	D	F	B	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.55	9.85	3.37	1.97	9.68	1.33	4.94	6.66	0.58	12.71	11.51	5.56
50th-Percentile Queue Length [ft/ln]	238.82	246.24	84.29	49.33	241.93	33.22	123.51	166.54	14.45	317.71	287.87	139.06
95th-Percentile Queue Length [veh/ln]	14.62	15.00	6.07	3.55	14.78	2.39	8.59	10.89	1.04	20.72	17.08	9.43
95th-Percentile Queue Length [ft/ln]	365.55	374.91	151.73	88.79	369.48	59.80	214.64	272.36	26.01	517.99	427.00	235.75

Movement, Approach, & Intersection Results

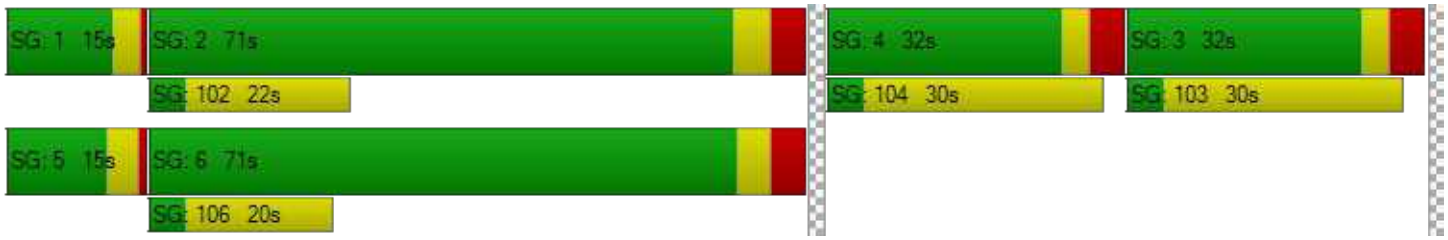
d_M, Delay for Movement [s/veh]	61.74	61.59	53.84	53.66	63.94	53.19	81.38	19.32	15.45	280.98	22.91	20.16
Movement LOS	E	E	D	D	E	D	F	B	B	F	C	C
d_A, Approach Delay [s/veh]	60.41			60.98			26.96			53.19		
Approach LOS	E			E			C			D		
d_I, Intersection Delay [s/veh]	48.17											
Intersection LOS	D											
Intersection V/C	0.669											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.25	67.25	67.25	67.25
l_p,int, Pedestrian LOS Score for Intersectio	2.475	2.314	2.895	2.927
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	340	850	845
d_b, Bicycle Delay [s]	52.17	52.09	24.85	25.14
l_b,int, Bicycle LOS Score for Intersection	2.578	2.139	2.341	2.879
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	97	246	58	108	288	47	108	771	81	116	894	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	246	58	108	288	47	108	771	81	116	894	87
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	66	16	29	77	13	29	207	22	31	240	23
Total Analysis Volume [veh/h]	104	265	62	116	310	51	116	829	87	125	961	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	19			38			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	130.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	28	35	0	28	35	0	12	67	0	20	75	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	34	34	12	30	30	8	75	75	12	79	79
g / C, Green / Cycle	0.10	0.22	0.22	0.08	0.20	0.20	0.05	0.50	0.50	0.08	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.04	0.07	0.17	0.03	0.07	0.23	0.05	0.07	0.27	0.06
s, saturation flow rate [veh/h]	1781	1870	1540	1781	1870	1503	1781	3560	1589	1781	3560	1544
c, Capacity [veh/h]	186	418	344	141	370	298	97	1778	794	149	1882	816
d1, Uniform Delay [s]	63.97	52.79	47.15	68.14	57.93	49.93	68.34	7.11	6.43	65.82	13.23	10.89
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	1.60	0.25	11.15	5.04	0.27	109.38	0.88	0.28	11.93	0.99	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.63	0.18	0.82	0.84	0.17	1.20	0.47	0.11	0.84	0.51	0.12
d, Delay for Lane Group [s/veh]	66.56	54.39	47.39	79.29	62.97	50.20	177.72	7.99	6.71	77.75	14.23	11.17
Lane Group LOS	E	D	D	E	E	D	F	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.96	9.36	1.94	4.88	11.97	1.65	6.53	2.91	0.59	5.09	6.60	1.09
50th-Percentile Queue Length [ft/ln]	99.09	233.95	48.51	121.88	299.16	41.14	163.30	72.76	14.81	127.33	164.96	27.21
95th-Percentile Queue Length [veh/ln]	7.13	14.37	3.49	8.50	17.64	2.96	11.28	5.24	1.07	8.79	10.81	1.96
95th-Percentile Queue Length [ft/ln]	178.37	359.37	87.32	212.40	440.99	74.05	281.89	130.97	26.66	219.85	270.28	48.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.56	54.39	47.39	79.29	62.97	50.20	177.72	7.99	6.71	77.75	14.23	11.17
Movement LOS	E	D	D	E	E	D	F	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.32			65.57			26.96			20.71		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	34.56											
Intersection LOS	C											
Intersection V/C	0.575											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.28	67.28	67.28	67.28
l_p,int, Pedestrian LOS Score for Intersectio	2.350	2.351	2.832	2.831
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	365	791	898
d_b, Bicycle Delay [s]	50.65	51.14	27.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.271	2.347	2.411	2.533
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	25	15	110	57	26	45	0	927	74	0	1079	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	15	110	57	26	45	0	927	74	0	1079	60
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	1.0000	0.9130	0.9130	1.0000	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	30	16	7	12	0	254	20	0	295	16
Total Analysis Volume [veh/h]	27	16	120	62	28	49	0	1015	81	0	1182	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			8			7			0		
v_di, Inbound Pedestrian Volume crossing m	0			7			8			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			36			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	143.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	37	0	0	37	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	16	16	16	13	13	107	107	107	107
g / C, Green / Cycle	0.11	0.11	0.11	0.09	0.09	0.72	0.72	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.08	0.03	0.05	0.29	0.05	0.33	0.04
s, saturation flow rate [veh/h]	1781	1870	1525	1781	1560	3560	1540	3560	1554
c, Capacity [veh/h]	194	204	166	156	136	2548	1102	2548	1112
d1, Uniform Delay [s]	60.48	60.08	64.43	64.75	65.74	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	0.16	5.79	1.64	3.63	0.47	0.13	0.61	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.08	0.72	0.40	0.56	0.40	0.07	0.46	0.06
d, Delay for Lane Group [s/veh]	60.81	60.24	70.22	66.39	69.37	0.47	0.13	0.61	0.10
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.96	0.56	4.71	2.34	3.00	0.17	0.04	0.22	0.03
50th-Percentile Queue Length [ft/ln]	23.92	14.05	117.87	58.62	75.11	4.13	0.99	5.40	0.79
95th-Percentile Queue Length [veh/ln]	1.72	1.01	8.28	4.22	5.41	0.30	0.07	0.39	0.06
95th-Percentile Queue Length [ft/ln]	43.06	25.30	206.90	105.51	135.20	7.44	1.78	9.71	1.42

Movement, Approach, & Intersection Results

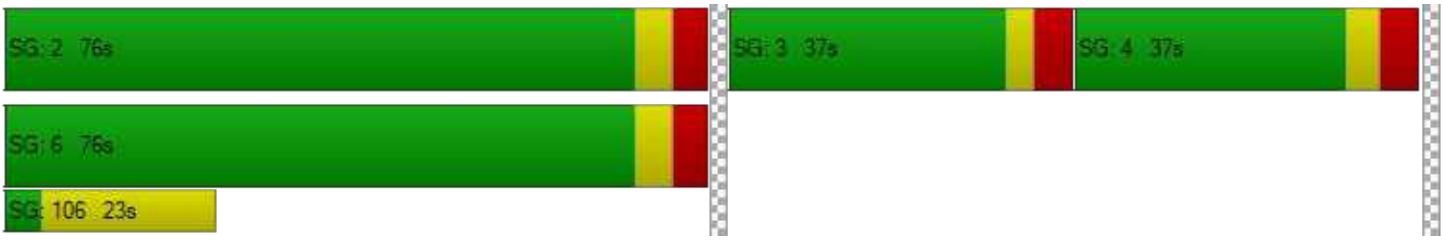
d_M, Delay for Movement [s/veh]	60.81	60.24	70.22	66.39	69.37	69.37	0.00	0.47	0.13	0.00	0.61	0.10
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	67.68			68.04			0.44			0.58		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	8.20											
Intersection LOS	A											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.030	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	392	912	912
d_b, Bicycle Delay [s]	48.36	49.39	22.23	22.26
l_b,int, Bicycle LOS Score for Intersection	1.829	1.789	2.464	2.589
Bicycle LOS	A	A	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	42.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	308	70	355	204	44	112	919	403	105	976	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	308	70	355	204	44	112	919	403	105	976	18
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	87	20	100	57	12	32	259	113	30	275	5
Total Analysis Volume [veh/h]	72	347	79	400	230	50	126	1035	454	118	1099	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			10			0			10		
v_di, Inbound Pedestrian Volume crossing m	0			10			0			10		
v_co, Outbound Pedestrian Volume crossing	12			0			0			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			0			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	41			11			1			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		No			Yes		No	Yes		No	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	60	60	24	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.40	0.40	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.12	0.12	0.03	0.07	0.29	0.29	0.07	0.31	0.01
s, saturation flow rate [veh/h]	1844	1724	3459	1870	1503	1781	3560	1570	1781	3560	1512
c, Capacity [veh/h]	295	276	665	360	289	202	1425	628	285	1591	676
d1, Uniform Delay [s]	61.34	61.70	55.33	55.79	50.52	60.67	28.74	28.52	49.21	13.70	10.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.05	31.80	3.99	8.43	1.30	13.67	3.27	7.07	4.39	2.48	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.89	0.60	0.64	0.17	0.62	0.73	0.72	0.41	0.69	0.03
d, Delay for Lane Group [s/veh]	87.39	93.50	59.31	64.22	51.81	74.34	32.00	35.59	53.59	16.19	10.74
Lane Group LOS	F	F	E	E	D	E	C	D	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.55	11.61	7.32	8.91	1.69	5.15	13.58	12.46	3.83	6.75	0.20
50th-Percentile Queue Length [ft/ln]	288.78	290.31	183.08	222.68	42.29	128.63	339.61	311.50	95.86	168.76	5.02
95th-Percentile Queue Length [veh/ln]	17.12	17.20	11.76	13.80	3.05	8.87	19.63	18.25	6.90	11.01	0.36
95th-Percentile Queue Length [ft/ln]	428.12	430.03	294.03	345.04	76.13	221.63	490.72	456.23	172.55	275.29	9.04

Movement, Approach, & Intersection Results

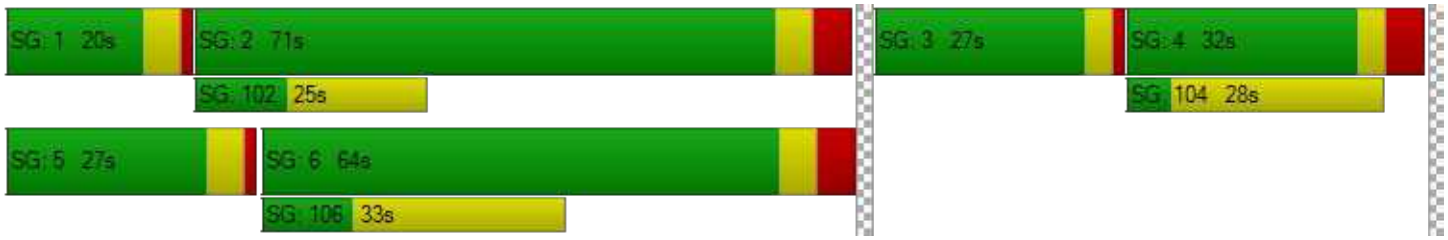
d_M, Delay for Movement [s/veh]	87.39	90.31	93.50	59.31	64.22	51.81	74.34	32.00	35.59	53.59	16.19	10.74
Movement LOS	F	F	F	E	E	D	E	C	D	D	B	B
d_A, Approach Delay [s/veh]	90.40			60.42			36.31			19.67		
Approach LOS	F			E			D			B		
d_I, Intersection Delay [s/veh]	41.96											
Intersection LOS	D											
Intersection V/C	0.662											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.247	2.735	0.000	2.932
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.90	52.38	29.54	25.35
l_b,int, Bicycle LOS Score for Intersection	1.970	2.682	2.892	2.580
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	6.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.391

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	38	16	33	6	4	50	29	1202	19	79	1421	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	16	33	6	4	50	29	1202	19	79	1421	25
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9500	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	4	9	2	1	13	8	322	5	21	380	7
Total Analysis Volume [veh/h]	41	17	35	6	4	54	31	1287	20	85	1521	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	6			4			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			4			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			0			3			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	40	40	40	40	40	40	24	86	86	24	86	86
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	15	15	15	7	116	116	9	118	118
g / C, Green / Cycle	0.10	0.10	0.10	0.05	0.77	0.77	0.06	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.06	0.01	0.03	0.02	0.24	0.24	0.05	0.29	0.29
s, saturation flow rate [veh/h]	1519	1420	1580	1781	3560	1853	1781	3560	1850
c, Capacity [veh/h]	188	182	160	87	2749	1431	106	2787	1448
d1, Uniform Delay [s]	64.37	60.95	62.76	67.86	0.00	0.00	68.18	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.01	0.12	1.24	2.44	0.30	0.57	12.92	0.37	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.05	0.34	0.36	0.31	0.31	0.80	0.37	0.37
d, Delay for Lane Group [s/veh]	66.38	61.08	64.00	70.30	0.30	0.57	81.10	0.37	0.72
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.55	0.36	2.03	1.19	0.11	0.23	3.53	0.14	0.29
50th-Percentile Queue Length [ft/ln]	88.71	9.02	50.66	29.79	2.84	5.68	88.26	3.59	7.20
95th-Percentile Queue Length [veh/ln]	6.39	0.65	3.65	2.15	0.20	0.41	6.35	0.26	0.52
95th-Percentile Queue Length [ft/ln]	159.68	16.24	91.18	53.63	5.11	10.23	158.87	6.47	12.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.38	66.38	66.38	61.08	61.08	64.00	70.30	0.39	0.57	81.10	0.49	0.72
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	66.38			63.54			2.01			4.69		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	6.58											
Intersection LOS	A											
Intersection V/C	0.391											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	64.41
l_p,int, Pedestrian LOS Score for Intersectio	1.804	1.996	0.000	3.167
Crosswalk LOS	A	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1052	1052
d_b, Bicycle Delay [s]	45.22	44.86	16.88	16.90
l_b,int, Bicycle LOS Score for Intersection	1.713	1.665	2.296	2.458
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	166	2	224	0	2	0	191	1039	4	2	1306	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	2	224	0	2	0	191	1039	4	2	1306	98
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	1	59	0	1	0	50	273	1	1	343	26
Total Analysis Volume [veh/h]	175	2	236	0	2	0	201	1093	4	2	1373	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			0			3			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	10	0	0	10	0	4	10	0	4	15	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	40	40	0	0	40	0	35	75	0	35	75	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	28	28	28	28	19	112	112	0	93	93
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.13	0.74	0.74	0.00	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.00	0.00	0.11	0.20	0.20	0.00	0.28	0.28
s, saturation flow rate [veh/h]	1415	1563	1142	1870	1781	3560	1866	1781	3560	1794
c, Capacity [veh/h]	291	290	79	347	225	2651	1389	5	2211	1114
d1, Uniform Delay [s]	58.67	58.73	0.00	49.84	61.39	0.14	0.14	74.61	5.85	5.86
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.98	5.77	0.00	0.01	11.63	0.25	0.48	45.45	0.65	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.82	0.00	0.01	0.89	0.27	0.27	0.40	0.44	0.45
d, Delay for Lane Group [s/veh]	60.66	64.50	0.00	49.85	73.02	0.39	0.62	120.06	6.50	7.15
Lane Group LOS	E	E	A	D	E	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.47	9.19	0.00	0.06	8.02	0.17	0.26	0.14	3.41	3.66
50th-Percentile Queue Length [ft/ln]	161.87	229.67	0.00	1.57	200.42	4.16	6.58	3.49	85.37	91.53
95th-Percentile Queue Length [veh/ln]	10.65	14.16	0.00	0.11	12.66	0.30	0.47	0.25	6.15	6.59
95th-Percentile Queue Length [ft/ln]	266.20	353.94	0.00	2.83	316.51	7.49	11.84	6.28	153.66	164.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.66	64.50	64.50	0.00	49.85	49.85	73.02	0.47	0.62	120.06	6.69	7.15
Movement LOS	E	E	E	A	D	D	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	62.87			49.85			11.71			6.87		
Approach LOS	E			D			B			A		
d_I, Intersection Delay [s/veh]	16.11											
Intersection LOS	B											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.969	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	905	905
d_b, Bicycle Delay [s]	44.97	44.86	22.51	22.52
l_b,int, Bicycle LOS Score for Intersection	2.241	1.563	2.274	2.373
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.396

Intersection Setup

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	17	1	38	3	0	3	85	1220	3	27	1502	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	6.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1	38	3	0	3	85	1220	3	27	1502	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	10	1	0	1	22	321	1	7	395	3
Total Analysis Volume [veh/h]	18	1	40	3	0	3	89	1284	3	28	1581	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			5			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	35	0	0	35	0	15	105	0	15	105	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	9	122	122	3	116	116
g / C, Green / Cycle	0.09	0.09	0.09	0.06	0.81	0.81	0.02	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.00	0.05	0.24	0.24	0.02	0.29	0.29
s, saturation flow rate [veh/h]	1520	1589	1371	1781	3560	1867	1781	3560	1860
c, Capacity [veh/h]	182	141	158	109	2886	1513	37	2740	1432
d1, Uniform Delay [s]	62.96	63.87	62.49	68.02	0.00	0.00	72.60	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	1.08	0.10	13.32	0.26	0.49	27.36	0.41	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.28	0.04	0.81	0.29	0.29	0.76	0.38	0.38
d, Delay for Lane Group [s/veh]	63.21	64.95	62.58	81.33	0.26	0.49	99.96	0.41	0.78
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.69	1.49	0.22	3.70	0.10	0.21	1.34	0.15	0.31
50th-Percentile Queue Length [ft/ln]	17.28	37.29	5.49	92.53	2.58	5.16	33.59	3.86	7.72
95th-Percentile Queue Length [veh/ln]	1.24	2.68	0.40	6.66	0.19	0.37	2.42	0.28	0.56
95th-Percentile Queue Length [ft/ln]	31.10	67.12	9.88	166.55	4.65	9.29	60.47	6.95	13.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.21	63.21	64.95	62.58	62.58	62.58	81.33	0.34	0.49	99.96	0.53	0.78
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.39			62.58			5.58			2.25		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.06											
Intersection LOS	A											
Intersection V/C	0.396											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.010	1.750	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	373	373	1307	1307
d_b, Bicycle Delay [s]	49.62	49.62	9.04	9.04
l_b,int, Bicycle LOS Score for Intersection	1.657	1.570	2.316	2.452
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	378	390	77	275	224	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.93	1.92	2.00	1.94	1.90	1.74
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	390	77	275	224	95
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	104	21	74	60	25
Total Analysis Volume [veh/h]	405	418	82	294	240	102
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		12	
v_di, Inbound Pedestrian Volume crossing m	0		0		11	
v_co, Outbound Pedestrian Volume crossing	11		11		10	
v_ci, Inbound Pedestrian Volume crossing mi	12		10		11	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		91		16	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	33	33	33	33	33	33
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	11	11	2	17	7	7
g / C, Green / Cycle	0.33	0.33	0.06	0.52	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.22	0.27	0.05	0.16	0.13	0.07
s, saturation flow rate [veh/h]	1871	1539	1781	1871	1782	1449
c, Capacity [veh/h]	628	517	116	983	403	327
d1, Uniform Delay [s]	9.28	9.87	15.09	4.41	11.41	10.55
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	1.17	2.91	0.06	0.53	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.81	0.71	0.30	0.60	0.31
d, Delay for Lane Group [s/veh]	9.70	11.03	18.01	4.47	11.94	10.75
Lane Group LOS	A	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.83	2.10	0.60	0.60	1.28	0.50
50th-Percentile Queue Length [ft/ln]	45.77	52.41	14.95	15.00	32.00	12.45
95th-Percentile Queue Length [veh/ln]	3.30	3.77	1.08	1.08	2.30	0.90
95th-Percentile Queue Length [ft/ln]	82.39	94.34	26.90	26.99	57.59	22.40

Movement, Approach, & Intersection Results

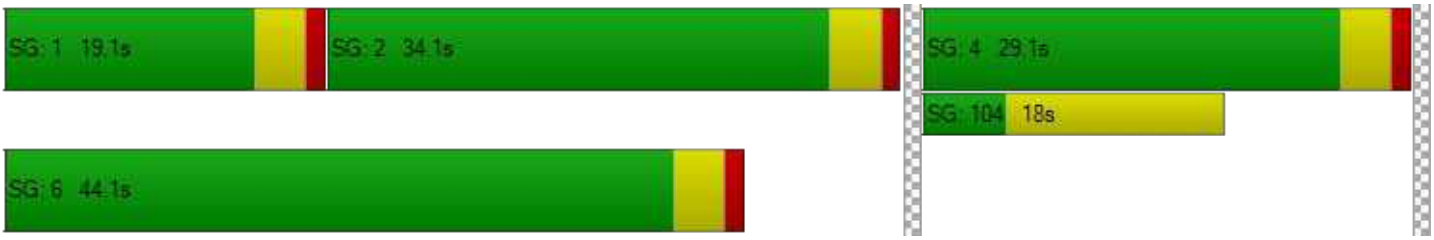
d_M, Delay for Movement [s/veh]	9.70	11.03	18.01	4.47	11.94	10.75
Movement LOS	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	10.38		7.42		11.59	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.92					
Intersection LOS	A					
Intersection V/C	0.515					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	8.63	0.73
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.123	2.013
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1829	2439	1524
d_b, Bicycle Delay [s]	0.12	0.83	0.93
l_b,int, Bicycle LOS Score for Intersection	2.918	2.180	1.560
Bicycle LOS	C	B	A

Sequence

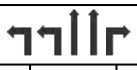
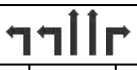
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Santa Cruz Ave/Sand Hill Rd

Control Type:	Signalized	Delay (sec / veh):	46.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	256	924	171	251	472	53	112	614	403	178	513	173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	256	924	171	251	472	53	112	614	403	178	513	173
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	237	44	64	121	14	29	157	103	46	131	44
Total Analysis Volume [veh/h]	262	947	175	257	484	54	115	629	413	182	526	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			3			1		
v_di, Inbound Pedestrian Volume crossing m	1			3			4			2		
v_co, Outbound Pedestrian Volume crossing	2			3			3			4		
v_ci, Inbound Pedestrian Volume crossing mi	3			4			2			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	33			33			29			49		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.6	4.3	4.3	3.6	4.3	4.3	3.6	4.1	4.1	3.6	4.1	4.1
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	19	47	47	20	48	48	13	53	53	20	60	60
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	4.3	4.3	2.6	4.3	4.3	2.6	4.1	4.1	2.6	4.1	4.1
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	6.30	6.30	4.60	6.30	6.30	4.60	6.10	6.10	4.60	6.10	6.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	4.30	4.30	2.60	4.30	4.30	2.60	4.10	4.10	2.60	4.10	4.10
g_i, Effective Green Time [s]	13	56	56	13	56	56	7	40	40	10	43	43
g / C, Green / Cycle	0.09	0.40	0.40	0.09	0.40	0.40	0.05	0.29	0.29	0.07	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.11	0.07	0.14	0.04	0.03	0.18	0.27	0.05	0.15	0.12
s, saturation flow rate [veh/h]	3459	3560	1536	3459	3560	1533	3459	3560	1524	3459	3560	1510
c, Capacity [veh/h]	313	1427	616	310	1424	613	163	1017	435	241	1097	465
d1, Uniform Delay [s]	62.69	34.24	28.24	62.71	29.17	26.09	65.77	43.40	48.27	63.98	39.33	37.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.28	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	2.45	1.16	5.70	0.65	0.28	5.48	0.62	22.02	4.79	0.33	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.66	0.28	0.83	0.34	0.09	0.71	0.62	0.95	0.76	0.48	0.38
d, Delay for Lane Group [s/veh]	68.64	36.69	29.40	68.41	29.82	26.37	71.25	44.01	70.29	68.77	39.65	38.23
Lane Group LOS	E	D	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.83	13.51	4.17	4.73	5.79	1.18	2.14	9.51	16.42	3.34	7.39	4.80
50th-Percentile Queue Length [ft/ln]	120.82	337.85	104.24	118.25	144.86	29.48	53.59	237.64	410.51	83.45	184.72	120.08
95th-Percentile Queue Length [veh/ln]	8.44	19.54	7.51	8.30	9.74	2.12	3.86	14.56	23.07	6.01	11.85	8.40
95th-Percentile Queue Length [ft/ln]	210.96	488.57	187.64	207.42	243.56	53.06	96.47	364.05	576.65	150.21	296.17	209.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.64	36.69	29.40	68.41	29.82	26.37	71.25	44.01	70.29	68.77	39.65	38.23
Movement LOS	E	D	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	41.81			42.06			56.10			45.35		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	46.52											
Intersection LOS	D											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.45	59.45	59.45	59.45
l_p,int, Pedestrian LOS Score for Intersectio	2.966	3.079	2.959	2.912
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	596	670	770
d_b, Bicycle Delay [s]	35.82	35.10	31.42	27.15
l_b,int, Bicycle LOS Score for Intersection	2.701	2.215	2.514	2.290
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	69.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.103

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	132	15	216	0	17	169	11	0	10	178	266
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	132	15	216	0	17	169	11	0	10	178	266
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	4	60	0	5	47	3	0	3	49	74
Total Analysis Volume [veh/h]	0	147	17	240	0	19	188	12	0	11	198	296
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	495	397	505
Degree of Utilization, x	0.82	0.55	1.10

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.86	3.23	17.03
95th-Percentile Queue Length [ft]	196.54	80.72	425.68
Approach Delay [s/veh]	35.04	22.70	100.74
Approach LOS	E	C	F
Intersection Delay [s/veh]	69.39		
Intersection LOS	F		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	324	94	3	0	5	68	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	94	3	0	5	68	3	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	26	1	0	1	19	1	0
Total Analysis Volume [veh/h]	360	104	3	0	6	76	3	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	467	396
Degree of Utilization, x	1.08	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	15.71	0.80
95th-Percentile Queue Length [ft]	392.68	20.07
Approach Delay [s/veh]	97.08	14.55
Approach LOS	F	B
Intersection Delay [s/veh]	69.39	
Intersection LOS	F	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	131	360	119	46	413	58	96	100	42	64	58	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	360	119	46	413	58	96	100	42	64	58	93
Peak Hour Factor	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	106	35	13	121	17	28	29	12	19	17	27
Total Analysis Volume [veh/h]	154	422	140	54	484	68	113	117	49	75	68	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	27			0			0			27		
v_di, Inbound Pedestrian Volume crossing m	27			0			0			27		
v_co, Outbound Pedestrian Volume crossing	6			0			6			0		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			6			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	26			2			7			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	54	54	54	54	54	54	54
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	23	29	20	16	16	16
g / C, Green / Cycle	0.54	0.42	0.54	0.38	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.14	0.32	0.05	0.30	0.25	0.06	0.11
s, saturation flow rate [veh/h]	1071	1762	984	1824	1139	1219	1560
c, Capacity [veh/h]	546	747	501	688	429	148	460
d1, Uniform Delay [s]	8.69	13.21	8.02	15.08	18.54	15.58	15.20
k, delay calibration	0.23	0.24	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.60	3.47	0.09	4.68	1.67	2.65	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.75	0.11	0.80	0.65	0.51	0.39
d, Delay for Lane Group [s/veh]	9.29	16.68	8.11	19.75	20.20	18.23	15.73
Lane Group LOS	A	B	A	B	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.73	5.30	0.23	5.84	3.27	0.80	1.65
50th-Percentile Queue Length [ft/ln]	18.36	132.51	5.64	146.07	81.66	19.93	41.29
95th-Percentile Queue Length [veh/ln]	1.32	9.08	0.41	9.81	5.88	1.43	2.97
95th-Percentile Queue Length [ft/ln]	33.04	226.90	10.15	245.17	146.99	35.87	74.33

Movement, Approach, & Intersection Results

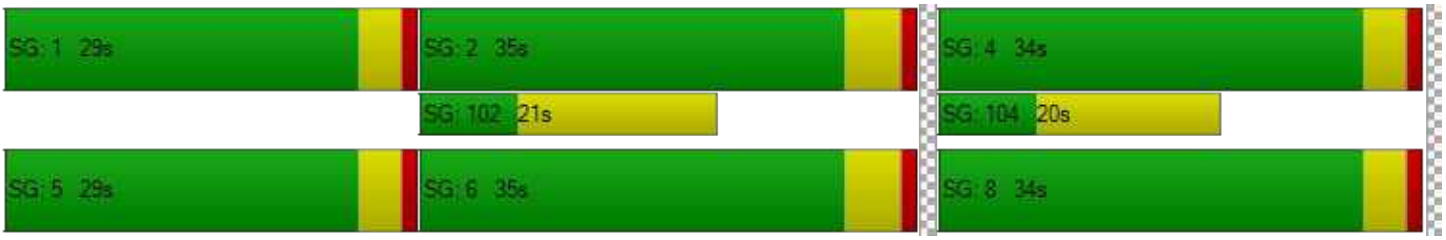
d_M, Delay for Movement [s/veh]	9.29	16.68	16.68	8.11	19.75	19.75	20.20	20.20	20.20	18.23	15.73	15.73
Movement LOS	A	B	B	A	B	B	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	15.09			18.71			20.20			16.47		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	17.23											
Intersection LOS	B											
Intersection V/C	0.646											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.16	0.00	17.16	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.611	0.000	1.941	0.000
Crosswalk LOS	B	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1110	1110	1110	1110
d_b, Bicycle Delay [s]	5.43	5.36	5.38	5.36
l_b,int, Bicycle LOS Score for Intersection	2.741	2.560	2.020	1.975
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		35.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	454	508	65	260	926	551
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	508	65	260	926	551
Peak Hour Factor	0.9660	0.9660	0.9660	0.9660	0.9660	0.9660
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	131	17	67	240	143
Total Analysis Volume [veh/h]	470	526	67	269	959	570
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	43		21		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	5	5	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	55	25	55	60	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	30	30	30	20	54	76	76
g / C, Green / Cycle	0.22	0.22	0.22	0.14	0.39	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.18	0.04	0.17	0.27	0.37
s, saturation flow rate [veh/h]	1781	1830	1870	1781	1574	3560	1561
c, Capacity [veh/h]	387	398	407	250	609	1940	850
d1, Uniform Delay [s]	52.31	52.31	52.31	53.68	31.60	19.81	22.57
k, delay calibration	0.11	0.11	0.11	0.11	0.30	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.79	4.67	4.58	0.57	1.39	0.90	4.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.84	0.84	0.27	0.44	0.49	0.67
d, Delay for Lane Group [s/veh]	57.10	56.98	56.89	54.25	33.00	20.72	26.75
Lane Group LOS	E	E	E	D	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.22	11.52	11.76	2.15	6.94	9.66	13.74
50th-Percentile Queue Length [ft/ln]	280.59	287.94	294.00	53.72	173.52	241.41	343.38
95th-Percentile Queue Length [veh/ln]	16.72	17.08	17.38	3.87	11.26	14.75	19.81
95th-Percentile Queue Length [ft/ln]	417.95	427.09	434.61	96.70	281.54	368.82	495.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.07	56.92	54.25	33.00	20.72	26.75
Movement LOS	E	E	D	C	C	C
d_A, Approach Delay [s/veh]	56.99		37.24		22.97	
Approach LOS	E		D		C	
d_I, Intersection Delay [s/veh]	36.49					
Intersection LOS	D					
Intersection V/C	0.733					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	721	299	788
d_b, Bicycle Delay [s]	29.26	51.15	25.89
l_b,int, Bicycle LOS Score for Intersection	2.381	1.560	2.821
Bicycle LOS	B	A	C

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Base Volume Input [veh/h]	1406	0	0	749	734	672
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1406	0	0	749	734	672
Peak Hour Factor	0.9640	1.0000	1.0000	0.9640	0.9640	0.9640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	365	0	0	194	190	174
Total Analysis Volume [veh/h]	1459	0	0	777	761	697
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	60	0	0	60	60	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	60	60	26	26
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.41	0.22	0.22	0.25
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2371	2371	982	799
d1, Uniform Delay [s]	8.52	6.43	29.63	30.72
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	0.37	0.50	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.33	0.77	0.87
d, Delay for Lane Group [s/veh]	9.72	6.80	30.13	31.92
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.14	2.83	7.41	7.10
50th-Percentile Queue Length [ft/ln]	178.57	70.85	185.20	177.59
95th-Percentile Queue Length [veh/ln]	11.53	5.10	11.87	11.47
95th-Percentile Queue Length [ft/ln]	288.14	127.53	296.79	286.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.72	0.00	0.00	6.80	30.13	31.92
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	9.72		6.80		30.99	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	17.50					
Intersection LOS	B					
Intersection V/C	0.713					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.49	34.71
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.848	2.486
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	564	1239
d_b, Bicycle Delay [s]	23.25	23.22	6.52
l_b,int, Bicycle LOS Score for Intersection	2.763	2.201	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	208	23	206	154	13	18	169	393	21	172	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	208	23	206	154	13	18	169	393	21	172	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	55	6	54	41	3	5	45	104	6	45	3
Total Analysis Volume [veh/h]	12	220	24	218	163	14	19	179	415	22	182	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	423	454	436	469	489	544	456
Degree of Utilization, x	0.03	0.54	0.50	0.38	0.41	0.76	0.47

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.09	3.12	2.73	1.74	1.94	6.79	2.49
95th-Percentile Queue Length [ft]	2.19	77.92	68.14	43.47	48.57	169.78	62.27
Approach Delay [s/veh]	19.10		17.15		23.47		17.78
Approach LOS	C		C		C		C
Intersection Delay [s/veh]	20.20						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.998

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	807	646	0	1428	542	0	0	0	543	0	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	807	646	0	1428	542	0	0	0	543	0	264
Peak Hour Factor	1.0000	0.9190	0.9190	1.0000	0.9190	0.9190	1.0000	1.0000	1.0000	0.9190	1.0000	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	220	176	0	388	147	0	0	0	148	0	72
Total Analysis Volume [veh/h]	0	878	703	0	1554	590	0	0	0	591	0	287
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	23	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	56	56	56		16	16
g / C, Green / Cycle	0.70	0.70	0.70		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.17	0.31	0.63		0.17	0.10
s, saturation flow rate [veh/h]	5094	5094	941		3459	2813
c, Capacity [veh/h]	3549	3549	656		702	571
d1, Uniform Delay [s]	4.43	5.28	9.84		30.57	28.22
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.17	0.39	17.70		2.83	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.44	0.90		0.84	0.50
d, Delay for Lane Group [s/veh]	4.60	5.68	27.53		33.40	28.91
Lane Group LOS	A	A	C		C	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	1.42	3.00	9.31		5.55	2.42
50th-Percentile Queue Length [ft/ln]	35.40	74.97	232.77		138.76	60.48
95th-Percentile Queue Length [veh/ln]	2.55	5.40	14.32		9.41	4.35
95th-Percentile Queue Length [ft/ln]	63.72	134.95	357.88		235.35	108.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	4.60	0.00	0.00	5.68	27.53	0.00	0.00	0.00	33.40	0.00	28.91
Movement LOS		A			A	C				C		C
d_A, Approach Delay [s/veh]	2.65			11.69			0.00			31.93		
Approach LOS	A			B			A			C		
d_I, Intersection Delay [s/veh]	14.21											
Intersection LOS	B											
Intersection V/C	0.998											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.968	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1327	1327	0	476
d_b, Bicycle Delay [s]	4.55	4.53	39.95	23.21
l_b,int, Bicycle LOS Score for Intersection	2.043	2.739	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

Intersection Setup

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Base Volume Input [veh/h]	0	994	336	0	1533	446	0	0	0	425	0	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	994	336	0	1533	446	0	0	0	425	0	606
Peak Hour Factor	1.0000	0.9580	0.9580	1.0000	0.9580	0.9580	1.0000	1.0000	1.0000	0.9580	1.0000	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	259	88	0	400	116	0	0	0	111	0	158
Total Analysis Volume [veh/h]	0	1038	351	0	1600	466	0	0	0	444	0	633
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	50	0	0	58	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	50	0	0	50	0	0	0	0	20	0	10
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	46	46	56		16	26
g / C, Green / Cycle	0.58	0.58	0.70		0.20	0.32
(v / s)_i Volume / Saturation Flow Rate	0.20	0.22	0.57		0.13	0.22
s, saturation flow rate [veh/h]	5094	1589	2828		3459	2813
c, Capacity [veh/h]	2936	916	1980		692	911
d1, Uniform Delay [s]	9.02	9.22	8.29		29.38	23.62
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.33	1.21	3.67		1.00	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.38	0.81		0.64	0.70
d, Delay for Lane Group [s/veh]	9.36	10.43	11.97		30.39	24.59
Lane Group LOS	A	B	B		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	2.94	3.26	5.32		3.89	5.08
50th-Percentile Queue Length [ft/ln]	73.39	81.45	133.01		97.27	126.97
95th-Percentile Queue Length [veh/ln]	5.28	5.86	9.10		7.00	8.77
95th-Percentile Queue Length [ft/ln]	132.10	146.61	227.58		175.08	219.37

Movement, Approach, & Intersection Results

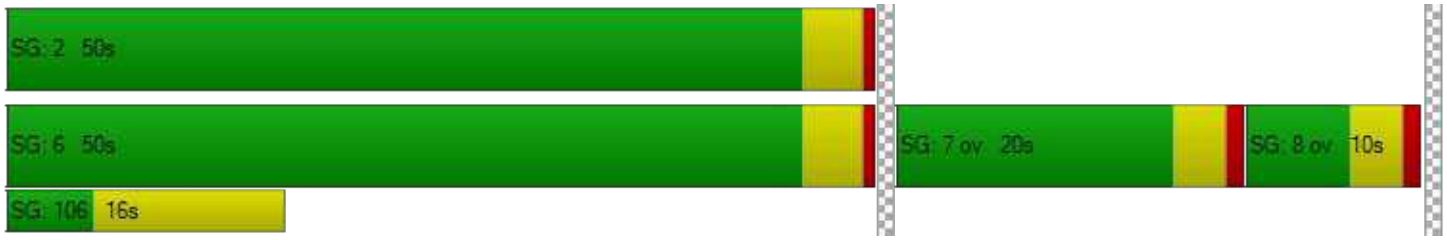
d_M, Delay for Movement [s/veh]	0.00	9.36	10.43	0.00	11.97	0.00	0.00	0.00	0.00	30.39	0.00	24.59
Movement LOS		A	B		B					C		C
d_A, Approach Delay [s/veh]	9.63			9.36			0.00			26.98		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	14.12											
Intersection LOS	B											
Intersection V/C	0.806											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.52	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1400	0	400
d_b, Bicycle Delay [s]	7.23	3.62	40.01	25.61
l_b,int, Bicycle LOS Score for Intersection	2.324	2.440	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.377

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	10	224	27	132	153	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	224	27	132	153	5
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	65	8	38	44	1
Total Analysis Volume [veh/h]	12	260	31	153	178	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	630	690	817	692
Degree of Utilization, x	0.02	0.38	0.23	0.27

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	1.76	0.86	1.07
95th-Percentile Queue Length [ft]	1.46	43.89	21.60	26.68
Approach Delay [s/veh]	10.92		8.69	10.07
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.03			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	489	0	0	421	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	489	0	0	421	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	0	0	105	0	0
Total Analysis Volume [veh/h]	489	0	0	421	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.35	0.00	16.81	11.22
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		14.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	489	0	0	421	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	489	0	0	421	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	0	0	105	0	0
Total Analysis Volume [veh/h]	489	0	0	421	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.35	0.00	16.81	11.22
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		14.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	33.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.834

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	100	16	248	18	50	201	6	9	165	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	100	16	248	18	50	201	6	9	165	26
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	34	5	85	6	17	69	2	3	57	9
Total Analysis Volume [veh/h]	41	188	137	22	340	25	68	275	8	12	226	36
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	469	465	452	439
Degree of Utilization, x	0.78	0.83	0.78	0.62

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.93	8.15	6.80	4.15
95th-Percentile Queue Length [ft]	173.28	203.87	169.89	103.72
Approach Delay [s/veh]	32.95	39.00	33.65	23.87
Approach LOS	D	E	D	C
Intersection Delay [s/veh]	33.02			
Intersection LOS	D			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	220	86	109	241	158	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	86	109	241	158	96
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	28	35	77	51	31
Total Analysis Volume [veh/h]	282	110	140	309	203	123
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	644	631	593
Degree of Utilization, x	0.61	0.71	0.55

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.12	5.89	3.33
95th-Percentile Queue Length [ft]	102.96	147.26	83.34
Approach Delay [s/veh]	16.86	21.56	16.24
Approach LOS	C	C	C
Intersection Delay [s/veh]	18.50		
Intersection LOS	C		

Intersection Level Of Service Report
Intersection 292: Ravenswood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	27.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	3	463	25	7	464	1	4	0	4	10	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	463	25	7	464	1	4	0	4	10	0	27
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	136	7	2	136	0	1	0	1	3	0	8
Total Analysis Volume [veh/h]	4	545	29	8	546	1	5	0	5	12	0	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.01	0.01	0.00	0.03	0.00	0.01	0.07	0.00	0.06
d_M, Delay for Movement [s/veh]	8.53	0.00	0.00	8.61	0.00	0.00	27.69	23.60	12.42	27.06	24.88	13.23
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.12	0.12	0.12	0.44	0.44	0.44
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	0.33	0.33	0.33	3.12	3.12	3.12	10.88	10.88	10.88
d_A, Approach Delay [s/veh]	0.06			0.12			20.05			17.00		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	0.89											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.369

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	18	5	30	10	4	14	13	255	3	10	127	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	5	30	10	4	14	13	255	3	10	127	15
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	8	3	1	4	4	72	1	3	36	4
Total Analysis Volume [veh/h]	20	6	34	11	4	16	15	287	3	11	143	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	754	742	826	810
Degree of Utilization, x	0.08	0.04	0.37	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.26	0.13	1.71	0.79
95th-Percentile Queue Length [ft]	6.46	3.27	42.72	19.86
Approach Delay [s/veh]	8.19	8.06	9.88	8.63
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.22			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	311	0	0	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	311	0	0	158
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	78	0	0	40
Total Analysis Volume [veh/h]	0	0	311	0	0	158
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.51	9.94	0.00	0.00	7.88	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.73		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.353

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	311	0	0	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	311	0	0	158
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	78	0	0	40
Total Analysis Volume [veh/h]	0	0	311	0	0	158
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	731	881	852
Degree of Utilization, x	0.00	0.35	0.19

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	1.60	0.68
95th-Percentile Queue Length [ft]	0.00	40.03	16.94
Approach Delay [s/veh]	0.00	9.30	8.18
Approach LOS	A	A	A
Intersection Delay [s/veh]	8.92		
Intersection LOS	A		

Vistro File:
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Report File: P:\...\BPAM.pdf

Scenario 18 Near-Term (2027) Plus Project AM

11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Right	0.826	25.4	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	SWB Left	0.646	22.8	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.658	35.9	D
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.557	18.5	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	SEB Thru	0.852	40.4	D
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NWB Left	0.725	455.2	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	1.103	423.2	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NWB Left	0.876	16.5	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	SB Left	0.709	19.9	B
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	SB Left	0.925	123.7	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	0.903	32.5	C
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Left	0.931	35.7	D
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.423	285.8	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	SWB Right	1.238	134.7	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.998	83.3	F
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.890	20.5	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.804	18.3	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	SWB Right	0.885	68.6	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	NEB Thru	0.746	58.1	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.695	22.7	C
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	7.120	47.6	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	SEB Left	0.718	52.1	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.616	34.3	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.515	7.8	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.872	53.5	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.412	6.2	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.588	15.3	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.404	4.8	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.532	10.1	B
39	Santa Cruz Ave/Sand Hill Rd	Signalized	HCM 7th Edition	NWB Right	0.740	47.2	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	WB Left	1.307	101.2	F
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Thru	0.649	17.8	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	SB Left	0.735	36.5	D
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.715	17.5	B
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	NWB Right	0.811	21.9	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.998	14.2	B
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWBL2	0.860	18.3	B

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.385	10.4	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.067	30.9	D
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Right	0.007	13.4	B
254	Glenwood Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.969	58.9	F
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.746	20.2	C
292	Ravenswood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	NWB Left	0.322	80.5	F
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.392	9.5	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SWB Left	0.045	12.4	B
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.373	9.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	801	1333	217	1006	561
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	801	1333	217	1006	561
Peak Hour Factor	1.0000	0.9550	0.9550	1.0000	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	210	349	54	263	147
Total Analysis Volume [veh/h]	0	839	1396	217	1053	587
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	60	60	0	35	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	55	55	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	53	50	33	33
g / C, Green / Cycle	0.58	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.21	0.39	0.30	0.37
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2334	1995	1268	583
d1, Uniform Delay [s]	9.90	14.34	26.03	28.58
k, delay calibration	0.50	0.50	0.04	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.43	2.07	0.55	37.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.70	0.83	1.01
d, Delay for Lane Group [s/veh]	10.33	16.41	26.58	66.07
Lane Group LOS	B	B	C	F
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.02	9.64	9.92	17.99
50th-Percentile Queue Length [ft/ln]	100.58	241.06	247.88	449.86
95th-Percentile Queue Length [veh/ln]	7.24	14.73	15.08	25.08
95th-Percentile Queue Length [ft/ln]	181.04	368.37	376.98	627.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.33	16.41	0.00	26.58	66.07
Movement LOS		B	B		C	F
d_A, Approach Delay [s/veh]	10.33		16.41		40.71	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	25.38					
Intersection LOS	C					
Intersection V/C	0.826					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.50	0.00	32.14
l_p,int, Pedestrian LOS Score for Intersectio	2.935	0.000	2.527
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	1119	686
d_b, Bicycle Delay [s]	8.76	8.75	19.45
l_b,int, Bicycle LOS Score for Intersection	2.252	2.711	1.560
Bicycle LOS	B	B	A

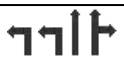
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	40	1173	2	274	1288	356	12	0	56	205	4	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1173	2	274	1288	356	12	0	56	205	4	2
Peak Hour Factor	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	295	1	69	324	90	3	0	14	52	1	1
Total Analysis Volume [veh/h]	40	1181	2	276	1297	359	12	0	56	206	4	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			2		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	60	60	20	65	65	0	40	0	40	40	40
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	85	85	14	79	79	0	16	0	20	20	20
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	92	92	10	98	98	10	10	14	14
g / C, Green / Cycle	0.04	0.68	0.68	0.07	0.73	0.73	0.07	0.07	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.08	0.44	0.48	0.01	0.02	0.06	0.06
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1737	1781	2736	1781	1780
c, Capacity [veh/h]	78	2423	1271	257	1357	1260	126	194	179	179
d1, Uniform Delay [s]	63.18	8.82	8.82	62.56	9.15	9.73	58.73	59.52	58.15	58.16
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	0.35	0.67	40.25	2.06	2.68	0.24	0.60	2.32	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.32	0.32	1.07	0.61	0.66	0.10	0.29	0.59	0.59
d, Delay for Lane Group [s/veh]	66.94	9.17	9.49	102.82	11.21	12.41	58.97	60.13	60.48	60.48
Lane Group LOS	E	A	A	F	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	4.50	4.84	5.82	11.42	12.23	0.40	0.94	3.62	3.62
50th-Percentile Queue Length [ft/ln]	35.57	112.61	120.98	145.61	285.52	305.69	9.94	23.42	90.56	90.54
95th-Percentile Queue Length [veh/ln]	2.56	7.99	8.45	10.01	16.96	17.96	0.72	1.69	6.52	6.52
95th-Percentile Queue Length [ft/ln]	64.03	199.63	211.17	250.33	424.08	449.06	17.90	42.16	163.01	162.96

Movement, Approach, & Intersection Results

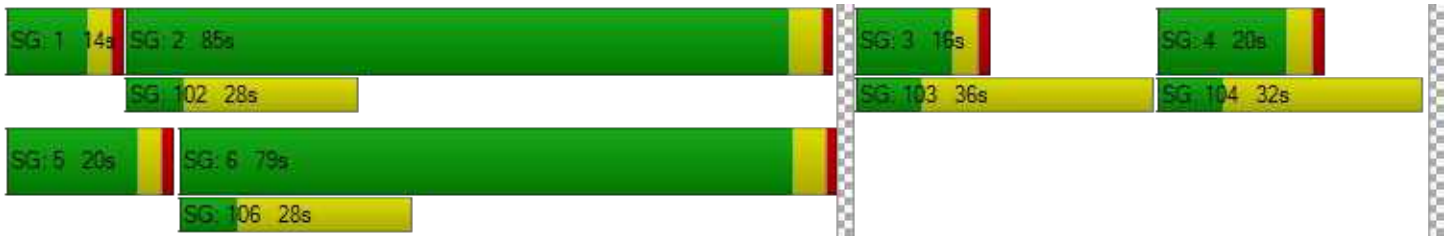
d_M, Delay for Movement [s/veh]	66.94	9.28	9.49	102.82	11.64	12.41	58.97	58.97	60.13	60.48	60.48	60.48
Movement LOS	E	A	A	F	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	11.17			24.81			59.92			60.48		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	22.85											
Intersection LOS	C											
Intersection V/C	0.646											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.07	56.07	56.99	56.99
l_p,int, Pedestrian LOS Score for Intersectio	3.024	3.161	2.376	2.125
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1096	175	234
d_b, Bicycle Delay [s]	11.23	13.81	56.28	52.67
l_b,int, Bicycle LOS Score for Intersection	2.232	3.154	1.672	1.909
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	152	699	64	26	935	396	507	25	206	19	14	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	699	64	26	935	396	507	25	206	19	14	21
Peak Hour Factor	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	177	16	7	237	100	128	6	52	5	4	5
Total Analysis Volume [veh/h]	154	708	65	26	947	401	514	25	209	19	14	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	20	80	80	18	72	72	35	35	35	0	35	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	58	58	15	58	58	37	45	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	102	102	5	94	94	29	29	29	11	11
g / C, Green / Cycle	0.08	0.66	0.66	0.03	0.61	0.61	0.18	0.18	0.18	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.09	0.21	0.21	0.01	0.38	0.38	0.15	0.15	0.13	0.01	0.02
s, saturation flow rate [veh/h]	1781	1870	1808	1781	1870	1684	1781	1789	1554	1781	1677
c, Capacity [veh/h]	150	1235	1193	56	1137	1024	329	331	287	128	120
d1, Uniform Delay [s]	71.04	11.33	11.34	73.79	19.11	19.32	60.71	60.70	59.34	67.56	68.26
k, delay calibration	0.20	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	53.83	0.68	0.71	2.16	2.53	2.94	3.75	3.72	2.63	0.40	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.32	0.32	0.46	0.62	0.63	0.82	0.82	0.73	0.15	0.29
d, Delay for Lane Group [s/veh]	124.87	12.01	12.05	75.96	21.65	22.26	64.47	64.41	61.97	67.96	69.25
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.18	5.94	5.78	1.05	16.30	15.20	10.63	10.66	8.02	0.73	1.37
50th-Percentile Queue Length [ft/ln]	204.41	148.39	144.43	26.31	407.57	379.91	265.81	266.52	200.54	18.28	34.19
95th-Percentile Queue Length [veh/ln]	13.00	9.93	9.72	1.89	22.92	21.59	15.98	16.02	12.67	1.32	2.46
95th-Percentile Queue Length [ft/ln]	325.08	248.29	242.97	47.36	573.11	539.74	399.50	400.39	316.66	32.90	61.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	124.87	12.03	12.05	75.96	21.80	22.26	64.44	64.41	61.97	67.96	69.25	69.25
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	30.77			22.96			63.75			68.79		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	35.92											
Intersection LOS	D											
Intersection V/C	0.658											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.92	66.92	66.92	66.92
l_p,int, Pedestrian LOS Score for Intersectio	2.877	2.975	2.424	2.012
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	529	423
d_b, Bicycle Delay [s]	33.36	33.32	42.08	48.20
l_b,int, Bicycle LOS Score for Intersection	2.324	2.693	2.794	1.649
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	621	72	246	883	69	128	41	1	46	21	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	621	72	246	883	69	128	41	1	46	21	181
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	164	19	65	233	18	34	11	0	12	6	48
Total Analysis Volume [veh/h]	0	656	76	260	932	73	135	43	1	49	22	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	56	34	56	22	56	34	34	34	34	0	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	41	41	17	61	61	25	25
g / C, Green / Cycle	0.45	0.45	0.19	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.15	0.27	0.27	0.18	0.16
s, saturation flow rate [veh/h]	1870	1628	1781	1870	1816	1016	1666
c, Capacity [veh/h]	887	738	334	1260	1224	349	505
d1, Uniform Delay [s]	17.03	17.07	34.85	6.58	6.59	29.91	28.19
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.25	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.58	2.09	3.93	0.96	1.00	2.63	1.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.46	0.78	0.40	0.41	0.51	0.52
d, Delay for Lane Group [s/veh]	18.61	19.16	38.78	7.54	7.60	32.54	29.95
Lane Group LOS	B	B	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.59	5.00	5.61	3.86	3.79	3.77	4.99
50th-Percentile Queue Length [ft/ln]	139.77	125.10	140.33	96.57	94.82	94.34	124.77
95th-Percentile Queue Length [veh/ln]	9.47	8.67	9.50	6.95	6.83	6.79	8.65
95th-Percentile Queue Length [ft/ln]	236.71	216.82	237.46	173.82	170.68	169.81	216.36

Movement, Approach, & Intersection Results

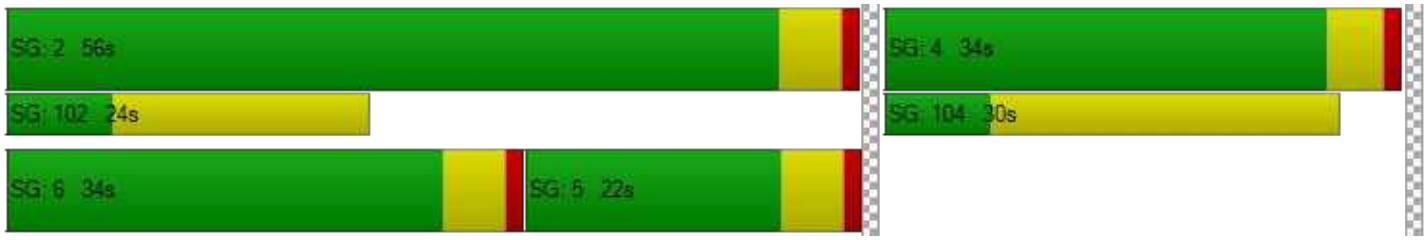
d_M, Delay for Movement [s/veh]	18.61	18.84	19.16	38.78	7.57	7.60	32.54	32.54	32.54	29.95	29.95	29.95
Movement LOS	B	B	B	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.87			13.98			32.54			29.95		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.53											
Intersection LOS	B											
Intersection V/C	0.557											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	28.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	20.78
l_p,int, Pedestrian LOS Score for Intersectio	2.688	3.003	1.826	2.006
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	1130	650	650
d_b, Bicycle Delay [s]	20.79	8.54	20.54	20.53
l_b,int, Bicycle LOS Score for Intersection	2.164	2.603	1.855	1.992
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.852

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	121	434	447	480	471	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	434	447	480	471	106
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	117	120	129	127	28
Total Analysis Volume [veh/h]	130	467	481	516	506	114
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing m	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	33	44	44	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	48	48	93	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	5	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	Yes	No	No	No	Yes	
Pedestrian Recall	No	No	No	Yes	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.60
g_i, Effective Green Time [s]	35	77	40	91	46
g / C, Green / Cycle	0.27	0.59	0.31	0.70	0.36
(v / s)_i Volume / Saturation Flow Rate	0.07	0.30	0.27	0.28	0.35
s, saturation flow rate [veh/h]	1781	1575	1781	1870	1787
c, Capacity [veh/h]	479	904	550	1311	636
d1, Uniform Delay [s]	37.47	16.68	42.53	8.03	41.34
k, delay calibration	0.50	0.50	0.35	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.39	2.11	12.88	0.89	30.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.52	0.87	0.39	0.98
d, Delay for Lane Group [s/veh]	38.87	18.79	55.41	8.92	71.54
Lane Group LOS	D	B	E	A	E
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.48	8.79	16.37	5.81	24.47
50th-Percentile Queue Length [ft/ln]	87.07	219.76	409.19	145.18	611.78
95th-Percentile Queue Length [veh/ln]	6.27	13.65	23.00	9.76	32.58
95th-Percentile Queue Length [ft/ln]	156.72	341.32	575.06	243.98	814.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.87	18.79	55.41	8.92	71.54	71.54
Movement LOS	D	B	E	A	E	E
d_A, Approach Delay [s/veh]	23.16		31.35		71.54	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	40.40					
Intersection LOS	D					
Intersection V/C	0.852					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	56.33	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.345	2.710	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	1361	623
d_b, Bicycle Delay [s]	36.98	6.76	31.40
l_b,int, Bicycle LOS Score for Intersection	1.560	3.205	2.583
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	455.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	72	26	16	127	143	323	427	566	119	224	529	134
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	26	16	127	143	323	427	566	119	224	529	134
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	7	4	35	39	89	117	155	33	62	145	37
Total Analysis Volume [veh/h]	79	29	18	140	157	355	469	622	131	246	581	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing m	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	62	25	62	57	25	57	28	62	25	22	57	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	55	38	55	83	38	83	9	55	38	37	83	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	2.5	2.6	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.50	4.60	4.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.50	2.60	2.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	40	40	40	40	5	59	59	22	76	76
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.04	0.45	0.45	0.17	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.09	0.03	0.20	0.23	0.26	0.17	0.09	0.14	0.20	0.21
s, saturation flow rate [veh/h]	886	1736	1523	1528	1781	3560	1401	1781	1870	1694
c, Capacity [veh/h]	174	541	515	476	69	1619	637	299	1095	991
d1, Uniform Delay [s]	53.56	31.66	39.13	39.67	62.50	23.43	21.07	52.25	14.00	14.10
k, delay calibration	0.10	0.10	0.13	0.21	0.50	0.50	0.50	0.14	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.77	0.07	1.25	4.56	2659.80	0.69	0.73	7.36	0.86	0.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.09	0.58	0.75	6.84	0.38	0.21	0.82	0.34	0.35
d, Delay for Lane Group [s/veh]	55.33	31.73	40.38	44.23	2722.29	24.12	21.80	59.60	14.86	15.09
Lane Group LOS	E	C	D	D	F	C	C	E	B	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.59	1.09	8.38	10.65	52.89	6.40	2.50	8.30	5.86	5.52
50th-Percentile Queue Length [ft/ln]	64.72	27.35	209.44	266.34	1322.25	160.01	62.38	207.53	146.43	138.02
95th-Percentile Queue Length [veh/ln]	4.66	1.97	13.12	16.01	77.01	10.55	4.49	13.03	9.83	9.37
95th-Percentile Queue Length [ft/ln]	116.50	49.22	328.11	400.17	1925.30	263.74	112.28	325.65	245.65	234.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.33	31.73	31.73	40.38	40.38	44.23	2722.29	24.12	21.80	59.60	14.94	15.09
Movement LOS	E	C	C	D	D	D	F	C	C	E	B	B
d_A, Approach Delay [s/veh]	46.53			42.48			1059.42			26.24		
Approach LOS	D			D			F			C		
d_I, Intersection Delay [s/veh]	455.19											
Intersection LOS	F											
Intersection V/C	0.725											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	54.47	54.47
l_p,int, Pedestrian LOS Score for Intersectio	2.153	2.302	3.041	2.892
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	777	1208
d_b, Bicycle Delay [s]	35.96	36.23	24.49	10.40
l_b,int, Bicycle LOS Score for Intersection	1.768	2.635	2.568	2.363
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	423.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.103

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	20	0	61	7	0	45	160	918	6	41	612	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	61	7	0	45	160	918	6	41	612	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	17	2	0	13	44	255	2	11	170	17
Total Analysis Volume [veh/h]	22	0	68	8	0	50	178	1020	7	46	680	69
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.10	0.00	0.16	0.39	0.00	0.17	0.21	0.01	0.00	0.07	0.01	0.00
d_M, Delay for Movement [s/veh]	423.16	350.41	251.03	219.11	155.29	55.67	10.28	0.00	0.00	10.71	0.00	0.00
Movement LOS	F	F	F	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	7.09	7.09	7.09	2.64	2.64	2.64	0.78	0.00	0.00	0.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	177.20	177.20	177.20	66.11	66.11	66.11	19.40	0.00	0.00	5.46	0.00	0.00
d_A, Approach Delay [s/veh]	293.11			78.22			1.52			0.62		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	15.47											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	1023	81	1077	3401	148	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1023	81	1077	3401	148	388
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	277	22	291	920	40	105
Total Analysis Volume [veh/h]	1107	88	1166	3681	160	420
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	113.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	60	144	84	144	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	5
Pedestrian Clearance [s]	35	13	0	13	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	29	29	39	72	11	54
g / C, Green / Cycle	0.31	0.31	0.42	0.77	0.12	0.58
(v / s)_i Volume / Saturation Flow Rate	0.22	0.06	0.34	0.72	0.05	0.10
s, saturation flow rate [veh/h]	5094	1570	3459	5094	3459	4220
c, Capacity [veh/h]	1597	492	1454	3936	416	2327
d1, Uniform Delay [s]	27.89	23.10	23.48	8.62	37.58	10.35
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.17	1.07	1.36	0.58	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.18	0.80	0.94	0.38	0.18
d, Delay for Lane Group [s/veh]	28.43	23.28	24.55	9.99	38.16	10.38
Lane Group LOS	C	C	C	A	D	B
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.51	1.29	9.79	8.57	1.67	1.32
50th-Percentile Queue Length [ft/ln]	162.67	32.33	244.76	214.25	41.74	32.93
95th-Percentile Queue Length [veh/ln]	10.69	2.33	14.92	13.37	3.01	2.37
95th-Percentile Queue Length [ft/ln]	267.25	58.19	373.05	334.28	75.13	59.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.43	23.28	24.55	9.99	38.16	10.38
Movement LOS	C	C	C	A	D	B
d_A, Approach Delay [s/veh]	28.05		13.49		18.05	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	16.52					
Intersection LOS	B					
Intersection V/C	0.876					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.72	0.00	37.72
l_p,int, Pedestrian LOS Score for Intersectio	3.883	0.000	2.895
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1102	2984	627
d_b, Bicycle Delay [s]	9.33	11.21	21.82
l_b,int, Bicycle LOS Score for Intersection	2.217	4.225	1.670
Bicycle LOS	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	93	211	427	10	39	27	62	733	161	882	2172	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	211	427	10	39	27	62	733	161	882	2172	41
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	56	114	3	10	7	17	195	43	235	579	11
Total Analysis Volume [veh/h]	99	225	455	11	42	29	66	781	172	940	2316	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing m	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	149	50	25	50	149
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	92	92	92	92	92	92	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	12	16	42	1	6	6	59	33	33	59	50	50
g / C, Green / Cycle	0.13	0.18	0.46	0.01	0.07	0.07	0.64	0.36	0.36	0.64	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.12	0.10	0.11	0.01	0.01	0.02	0.15	0.15	0.11	0.51	0.45	0.03
s, saturation flow rate [veh/h]	797	2249	4220	937	3560	1553	436	5094	1589	1833	5094	1589
c, Capacity [veh/h]	107	403	1947	13	236	103	278	1805	563	1176	2773	865
d1, Uniform Delay [s]	39.27	34.41	14.94	45.26	40.54	40.81	14.97	22.62	21.48	11.78	17.50	9.81
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.83	1.22	0.06	85.33	0.36	1.48	0.43	0.16	0.30	1.30	0.70	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.56	0.23	0.87	0.18	0.28	0.24	0.43	0.31	0.80	0.84	0.05
d, Delay for Lane Group [s/veh]	64.09	35.63	15.00	130.58	40.90	42.28	15.41	22.79	21.78	13.08	18.20	9.84
Lane Group LOS	E	D	B	F	D	D	B	C	C	B	B	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.86	2.27	1.78	0.55	0.47	0.67	0.23	4.20	2.66	4.67	12.54	0.40
50th-Percentile Queue Length [ft/ln]	71.49	56.74	44.58	13.79	11.65	16.85	5.87	104.95	66.59	116.67	313.55	10.02
95th-Percentile Queue Length [veh/ln]	5.15	4.09	3.21	0.99	0.84	1.21	0.42	7.56	4.79	8.21	18.35	0.72
95th-Percentile Queue Length [ft/ln]	128.68	102.14	80.24	24.82	20.98	30.33	10.56	188.91	119.86	205.25	458.75	18.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.09	35.63	15.00	130.58	40.90	42.28	15.41	22.79	21.78	13.08	18.20	9.84
Movement LOS	E	D	B	F	D	D	B	C	C	B	B	A
d_A, Approach Delay [s/veh]	27.20			53.42			22.14			16.63		
Approach LOS	C			D			C			B		
d_I, Intersection Delay [s/veh]	19.89											
Intersection LOS	B											
Intersection V/C	0.709											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.36	0.00	37.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.578	0.000	3.162	0.000
Crosswalk LOS	D	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	819	673	3245	1982
d_b, Bicycle Delay [s]	16.01	20.21	17.80	0.00
l_b,int, Bicycle LOS Score for Intersection	2.202	1.627	2.120	3.375
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	123.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	125	706	74	495	848	18	59	16	73	16	6	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	706	74	495	848	18	59	16	73	16	6	155
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	181	19	127	217	5	15	4	19	4	2	40
Total Analysis Volume [veh/h]	128	723	76	507	869	18	60	16	75	16	6	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing m	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	7	49	49	7	49	49	34	34	34	34	34	34
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	56	49	49	56	49	49	26	27
g / C, Green / Cycle	0.63	0.55	0.55	0.63	0.55	0.55	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.20	0.49	0.49	0.72	0.45	0.45	0.26	0.19
s, saturation flow rate [veh/h]	642	837	802	703	984	973	572	947
c, Capacity [veh/h]	270	460	440	253	541	535	223	301
d1, Uniform Delay [s]	18.47	17.75	17.91	38.61	16.66	16.73	32.01	28.23
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.26	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.87	21.19	22.92	463.85	13.24	13.68	8.37	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.88	0.89	2.00	0.82	0.83	0.68	0.60
d, Delay for Lane Group [s/veh]	24.34	38.94	40.83	502.46	29.90	30.42	40.38	30.67
Lane Group LOS	C	D	D	F	C	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.35	8.96	8.90	34.89	8.78	8.82	3.71	3.53
50th-Percentile Queue Length [ft/ln]	33.77	223.96	222.60	872.31	219.59	220.44	92.85	88.26
95th-Percentile Queue Length [veh/ln]	2.43	13.87	13.80	62.06	13.64	13.69	6.69	6.35
95th-Percentile Queue Length [ft/ln]	60.79	346.67	344.94	1551.49	341.10	342.19	167.13	158.87

Movement, Approach, & Intersection Results

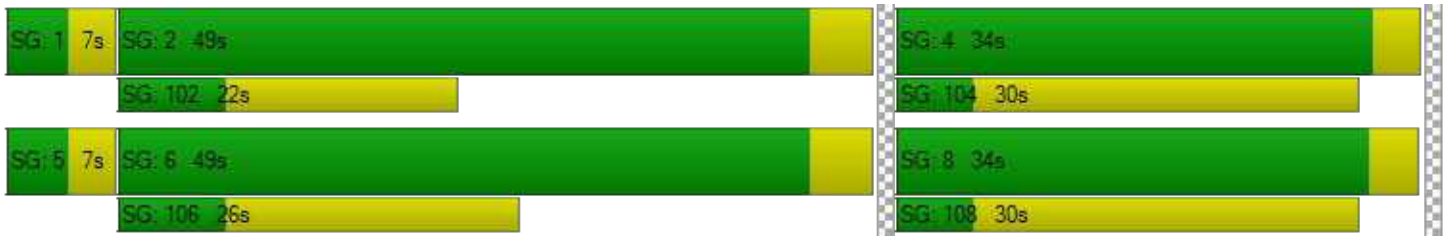
d_M, Delay for Movement [s/veh]	24.34	39.77	40.83	502.46	30.15	30.42	40.38	40.38	40.38	30.67	30.67	30.67
Movement LOS	C	D	D	F	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	37.72			201.93			40.38			30.67		
Approach LOS	D			F			D			C		
d_I, Intersection Delay [s/veh]	123.68											
Intersection LOS	F											
Intersection V/C	0.925											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.44	36.44	34.66	34.66
l_p,int, Pedestrian LOS Score for Intersectio	3.114	2.919	1.942	2.648
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1000	685	689
d_b, Bicycle Delay [s]	11.32	11.46	19.51	19.43
l_b,int, Bicycle LOS Score for Intersection	2.324	2.710	1.809	1.858
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.903

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	73	690	983	49	56	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	690	983	49	56	83
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	178	254	13	14	21
Total Analysis Volume [veh/h]	75	714	1017	51	58	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing m	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	130	130	130	30	30
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	130	114	114	30	30
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	133	117	117	20	20
g / C, Green / Cycle	0.08	0.83	0.73	0.73	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.09	0.45	0.64	0.65	0.03	0.11
s, saturation flow rate [veh/h]	797	1593	837	821	1704	803
c, Capacity [veh/h]	65	1324	611	600	213	101
d1, Uniform Delay [s]	73.59	4.14	16.04	16.61	63.49	68.43
k, delay calibration	0.21	0.50	0.50	0.50	0.04	0.09
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	120.19	1.58	15.87	17.88	0.25	15.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.54	0.87	0.89	0.27	0.86
d, Delay for Lane Group [s/veh]	193.78	5.72	31.91	34.49	63.74	83.77
Lane Group LOS	F	A	C	C	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.82	2.98	15.41	16.14	2.18	3.89
50th-Percentile Queue Length [ft/ln]	120.54	74.48	385.14	403.57	54.48	97.18
95th-Percentile Queue Length [veh/ln]	8.68	5.36	21.84	22.73	3.92	7.00
95th-Percentile Queue Length [ft/ln]	216.97	134.06	546.06	568.30	98.07	174.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	193.78	5.72	33.13	34.49	63.74	83.77
Movement LOS	F	A	C	C	E	F
d_A, Approach Delay [s/veh]	23.59		33.20		75.70	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	32.47					
Intersection LOS	C					
Intersection V/C	0.903					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.31	71.31	69.44
l_p,int, Pedestrian LOS Score for Intersectio	2.820	2.758	2.055
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1574	1374	337
d_b, Bicycle Delay [s]	3.65	7.85	55.36
l_b,int, Bicycle LOS Score for Intersection	2.211	2.441	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.931

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	747	583	48	1075	457	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	747	583	48	1075	457	49
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	196	153	13	283	120	13
Total Analysis Volume [veh/h]	785	613	50	1130	481	52
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	135	135	21	135	30	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	115	115	15	130	30	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	117	117	6	126	27	27
g / C, Green / Cycle	0.73	0.73	0.04	0.79	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.49	0.40	0.03	0.71	0.17	0.17
s, saturation flow rate [veh/h]	1593	1518	1781	1593	1406	1744
c, Capacity [veh/h]	1166	1111	66	1255	235	292
d1, Uniform Delay [s]	11.35	9.37	76.47	12.43	66.73	66.73
k, delay calibration	0.50	0.50	0.04	0.50	0.38	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.11	1.97	6.52	10.52	53.93	48.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.55	0.76	0.90	1.01	1.01
d, Delay for Lane Group [s/veh]	14.46	11.34	82.99	22.95	120.66	115.47
Lane Group LOS	B	B	F	C	F	F
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.14	9.16	2.15	13.71	13.18	15.92
50th-Percentile Queue Length [ft/ln]	178.40	228.99	53.81	342.87	329.41	398.07
95th-Percentile Queue Length [veh/ln]	11.52	14.12	3.87	19.79	19.24	22.60
95th-Percentile Queue Length [ft/ln]	287.93	353.08	96.85	494.71	480.91	564.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.46	11.34	82.99	22.95	118.07	115.47
Movement LOS	B	B	F	C	F	F
d_A, Approach Delay [s/veh]	13.09		25.50		117.79	
Approach LOS	B		C		F	
d_I, Intersection Delay [s/veh]	35.74					
Intersection LOS	D					
Intersection V/C	0.931					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.356
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1386	1574	335
d_b, Bicycle Delay [s]	7.59	3.64	55.54
l_b,int, Bicycle LOS Score for Intersection	2.713	2.533	2.439
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	285.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.423

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	178	1052	283	66	1433	20	22	136	375	381	97	123
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	178	1052	283	66	1433	20	22	136	375	381	97	123
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	285	77	18	389	5	6	37	102	103	26	33
Total Analysis Volume [veh/h]	193	1141	307	72	1554	22	24	148	407	413	105	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	80	80	21	80	80	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	31	31	39	59	59	10	29	29	31	50	50
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	20	20	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	8	37	37	7	36	36	3	35	35	36	67	67
g / C, Green / Cycle	0.06	0.29	0.29	0.05	0.28	0.28	0.02	0.27	0.27	0.28	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.11	0.28	0.28	0.04	0.65	0.65	0.02	0.09	0.26	0.27	0.13	0.19
s, saturation flow rate [veh/h]	1781	3560	1638	1781	1593	829	1528	1604	1538	1547	837	689
c, Capacity [veh/h]	110	1025	472	91	442	230	34	428	411	431	431	355
d1, Uniform Delay [s]	61.00	45.55	45.98	60.97	46.95	46.95	63.13	38.48	46.95	46.16	17.45	18.77
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.14	0.04	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	354.86	20.02	37.52	5.57	611.09	619.09	23.19	0.18	21.72	5.87	0.29	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.76	0.96	0.98	0.79	2.34	2.35	0.70	0.35	0.99	0.96	0.24	0.37
d, Delay for Lane Group [s/veh]	415.86	65.57	83.49	66.54	658.05	666.04	86.31	38.65	68.67	52.02	17.74	19.42
Lane Group LOS	F	E	F	E	F	F	F	D	E	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	14.37	18.08	19.40	2.51	44.71	47.07	1.01	3.86	15.37	6.88	1.79	2.45
50th-Percentile Queue Length [ft/ln]	359.28	452.06	484.91	62.81	1117.68	1176.71	25.25	96.60	384.28	171.95	44.68	61.31
95th-Percentile Queue Length [veh/ln]	23.61	25.06	26.62	4.52	74.10	77.73	1.82	6.96	21.80	11.18	3.22	4.41
95th-Percentile Queue Length [ft/ln]	590.32	626.41	665.48	113.06	1852.54	1943.32	45.45	173.88	545.03	279.47	80.43	110.36

Movement, Approach, & Intersection Results

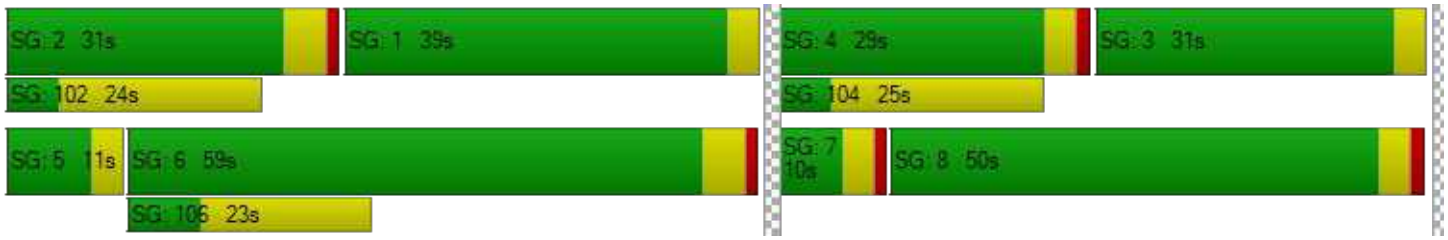
d_M, Delay for Movement [s/veh]	415.86	68.03	83.49	66.54	660.72	666.04	86.31	38.65	68.67	52.02	17.74	19.42
Movement LOS	F	E	F	E	F	F	F	D	E	D	B	B
d_A, Approach Delay [s/veh]	111.83			634.83			61.73			39.83		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	285.77											
Intersection LOS	F											
Intersection V/C	1.423											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	46.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	27.14	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.358	2.926	2.368	2.549
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	831	385	708
d_b, Bicycle Delay [s]	41.64	22.23	42.51	27.33
l_b,int, Bicycle LOS Score for Intersection	2.462	2.466	2.515	2.634
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	134.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.238

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	90	1193	1314	762	321	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	1193	1314	762	321	56
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	315	347	201	85	15
Total Analysis Volume [veh/h]	95	1258	1386	804	339	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		2		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	12	60	48	48	20	20
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	8	47	36	36	34	34
g / C, Green / Cycle	0.09	0.52	0.39	0.39	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.07	0.48	0.50	0.66	0.36	0.04
s, saturation flow rate [veh/h]	1312	2623	2792	1227	937	1569
c, Capacity [veh/h]	111	1358	1102	484	352	590
d1, Uniform Delay [s]	41.19	20.38	27.63	27.24	27.84	18.46
k, delay calibration	0.04	0.19	0.20	0.50	0.37	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.79	5.46	119.40	306.26	33.08	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.93	1.26	1.66	0.96	0.10
d, Delay for Lane Group [s/veh]	47.98	25.84	147.02	333.50	60.91	18.48
Lane Group LOS	D	C	F	F	E	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.29	12.34	29.42	50.86	10.11	0.80
50th-Percentile Queue Length [ft/ln]	57.30	308.38	735.43	1271.48	252.74	19.93
95th-Percentile Queue Length [veh/ln]	4.13	18.10	44.21	81.08	15.32	1.44
95th-Percentile Queue Length [ft/ln]	103.14	452.38	1105.24	2027.05	383.10	35.88

Movement, Approach, & Intersection Results

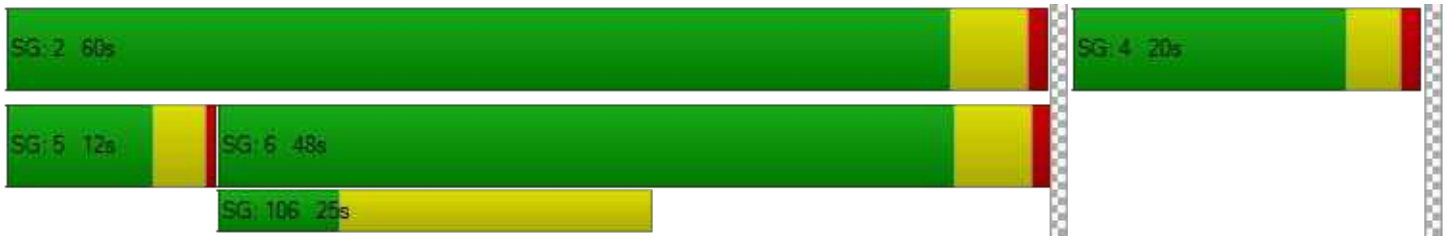
d_M, Delay for Movement [s/veh]	47.98	25.84	147.02	333.50	60.91	18.48
Movement LOS	D	C	F	F	E	B
d_A, Approach Delay [s/veh]	27.39		215.48		54.62	
Approach LOS	C		F		D	
d_I, Intersection Delay [s/veh]	134.66					
Intersection LOS	F					
Intersection V/C	1.238					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	35.33
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.362
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1193	931	346
d_b, Bicycle Delay [s]	7.47	13.07	31.25
l_b,int, Bicycle LOS Score for Intersection	2.676	3.366	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	83.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.998

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	18	851	10	36	1126	46	40	4	15	83	6	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	851	10	36	1126	46	40	4	15	83	6	133
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	220	3	9	291	12	10	1	4	21	2	34
Total Analysis Volume [veh/h]	19	880	10	37	1164	48	41	4	16	86	6	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	3	96	96	6	100	11	11	11	21	21
g / C, Green / Cycle	0.02	0.63	0.63	0.04	0.65	0.07	0.07	0.07	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.27	0.27	0.04	0.79	0.02	0.02	0.01	0.09	0.12
s, saturation flow rate [veh/h]	937	1422	1862	937	1533	937	1364	1318	937	1181
c, Capacity [veh/h]	18	894	1170	40	999	69	101	97	129	163
d1, Uniform Delay [s]	75.25	14.53	14.54	73.21	26.70	67.12	67.12	66.48	62.73	64.89
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	120.63	0.70	0.54	49.94	105.27	2.03	1.39	0.79	5.72	20.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.43	0.43	0.93	1.21	0.27	0.26	0.16	0.66	0.88
d, Delay for Lane Group [s/veh]	195.88	15.24	15.08	123.16	131.97	69.15	68.50	67.26	68.45	85.05
Lane Group LOS	F	B	B	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.30	7.11	9.27	2.02	64.00	0.74	1.06	0.63	3.43	6.49
50th-Percentile Queue Length [ft/ln]	32.49	177.85	231.77	50.50	1599.91	18.53	26.38	15.66	85.70	162.36
95th-Percentile Queue Length [veh/ln]	2.34	11.49	14.26	3.64	90.15	1.33	1.90	1.13	6.17	10.67
95th-Percentile Queue Length [ft/ln]	58.48	287.21	356.61	90.90	2253.84	33.35	47.48	28.19	154.26	266.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	195.88	15.15	15.08	123.16	131.97	131.97	68.80	68.50	67.26	68.45	85.05	85.05
Movement LOS	F	B	B	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	18.92			131.71			68.37			78.84		
Approach LOS	B			F			E			E		
d_I, Intersection Delay [s/veh]	83.30											
Intersection LOS	F											
Intersection V/C	0.998											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.00	66.00	66.00	66.00
l_p,int, Pedestrian LOS Score for Intersectio	2.598	2.791	2.167	2.042
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	261	261	392	392
d_b, Bicycle Delay [s]	57.99	58.02	49.56	49.56
l_b,int, Bicycle LOS Score for Intersection	2.310	3.620	1.660	1.939
Bicycle LOS	B	D	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	17	719	4	5	1047	128	167	3	38	3	7	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	719	4	5	1047	128	167	3	38	3	7	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	189	1	1	276	34	44	1	10	1	2	1
Total Analysis Volume [veh/h]	18	757	4	5	1102	135	176	3	40	3	7	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing m	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			59			13			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	94	94	94	94	94	94	36	36	36	0	36	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	99	99	99	99	23	23
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.04	0.41	0.01	0.68	0.16	0.01
s, saturation flow rate [veh/h]	450	1868	705	1822	1340	1747
c, Capacity [veh/h]	161	1418	460	1383	288	344
d1, Uniform Delay [s]	39.65	6.34	11.84	11.71	52.07	44.23
k, delay calibration	0.50	0.50	0.50	0.50	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.41	1.46	0.04	9.21	7.58	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.54	0.01	0.89	0.76	0.04
d, Delay for Lane Group [s/veh]	41.06	7.80	11.89	20.91	59.65	44.28
Lane Group LOS	D	A	B	C	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.53	8.32	0.07	25.91	7.60	0.39
50th-Percentile Queue Length [ft/ln]	13.27	208.07	1.71	647.64	190.09	9.64
95th-Percentile Queue Length [veh/ln]	0.96	13.05	0.12	34.25	12.13	0.69
95th-Percentile Queue Length [ft/ln]	23.89	326.36	3.07	856.32	303.14	17.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.06	7.80	7.80	11.89	20.91	20.91	59.65	59.65	59.65	44.28	44.28	44.28
Movement LOS	D	A	A	B	C	C	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	8.57			20.88			59.65			44.28		
Approach LOS	A			C			E			D		
d_I, Intersection Delay [s/veh]	20.54											
Intersection LOS	C											
Intersection V/C	0.890											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.39	54.39	54.39	54.39
l_p,int, Pedestrian LOS Score for Intersectio	2.483	2.916	1.943	1.750
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1385	1385	491	491
d_b, Bicycle Delay [s]	6.17	6.33	37.19	37.07
l_b,int, Bicycle LOS Score for Intersection	2.845	3.609	1.921	1.583
Bicycle LOS	C	D	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	4	585	75	35	1049	1	27	69	12	102	108	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	585	75	35	1049	1	27	69	12	102	108	114
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	156	20	9	280	0	7	18	3	27	29	30
Total Analysis Volume [veh/h]	4	625	80	37	1121	1	29	74	13	109	115	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing m	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			32			7			13		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	64	64	64	64	64	64	26	26	26	0	26	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	63	63	63	63	19	19	19	19
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.01	0.39	0.05	0.60	0.03	0.05	0.09	0.14
s, saturation flow rate [veh/h]	502	1824	742	1870	1138	1802	1282	1680
c, Capacity [veh/h]	197	1273	445	1305	144	381	267	355
d1, Uniform Delay [s]	26.70	6.70	12.24	10.28	41.17	29.43	35.88	32.60
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	1.74	0.37	7.57	0.68	0.30	1.00	2.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.55	0.08	0.86	0.20	0.23	0.41	0.67
d, Delay for Lane Group [s/veh]	26.89	8.44	12.61	17.85	41.85	29.73	36.88	34.78
Lane Group LOS	C	A	B	B	D	C	D	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	6.26	0.44	16.52	0.65	1.59	2.30	4.92
50th-Percentile Queue Length [ft/ln]	1.93	156.40	10.93	412.96	16.26	39.77	57.50	122.99
95th-Percentile Queue Length [veh/ln]	0.14	10.36	0.79	23.18	1.17	2.86	4.14	8.56
95th-Percentile Queue Length [ft/ln]	3.47	258.94	19.67	579.60	29.27	71.59	103.50	213.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.89	8.44	8.44	12.61	17.85	17.85	41.85	29.73	29.73	36.88	34.78	34.78
Movement LOS	C	A	A	B	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	8.54			17.69			32.76			35.44		
Approach LOS	A			B			C			D		
d_I, Intersection Delay [s/veh]	18.29											
Intersection LOS	B											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersectio	2.623	2.565	2.009	2.138
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1331	1331	487	487
d_b, Bicycle Delay [s]	5.11	5.12	25.86	25.94
l_b,int, Bicycle LOS Score for Intersection	2.729	3.472	1.751	2.131
Bicycle LOS	B	C	A	B

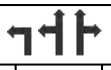
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	68.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.885

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	32	228	106	356	146	753	86	333	144	316	238	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	32	228	106	356	146	753	86	333	144	316	238	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	59	28	93	38	196	22	87	38	82	62	3
Total Analysis Volume [veh/h]	33	238	110	371	152	784	90	347	150	329	248	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10			2			10			2		
v_di, Inbound Pedestrian Volume crossing m	10			2			10			2		
v_co, Outbound Pedestrian Volume crossing	5			3			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			3			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	17			17			6			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	24	24	24	70	70	70	18	18	18	18	21	21	21
g / C, Green / Cycle	0.16	0.16	0.16	0.46	0.46	0.46	0.12	0.12	0.12	0.12	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.13	0.07	0.15	0.14	0.50	0.05	0.09	0.09	0.10	0.11	0.11	0.11
s, saturation flow rate [veh/h]	1781	1870	1475	1781	1832	1557	1781	1870	1870	1528	1781	1808	1838
c, Capacity [veh/h]	279	293	231	828	851	724	210	221	221	180	245	249	253
d1, Uniform Delay [s]	54.31	61.08	57.27	25.15	25.03	39.41	61.40	64.26	64.26	64.37	62.51	62.49	62.51
k, delay calibration	0.11	0.20	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	9.51	1.52	1.00	0.93	58.12	1.38	6.10	6.10	9.50	5.62	5.49	5.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.81	0.48	0.32	0.31	1.08	0.43	0.79	0.79	0.83	0.79	0.79	0.79
d, Delay for Lane Group [s/veh]	54.50	70.59	58.79	26.15	25.97	97.53	62.78	70.36	70.36	73.88	68.13	67.98	67.98
Lane Group LOS	D	E	E	C	C	F	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.10	9.56	3.91	6.25	6.22	37.83	3.29	6.85	6.85	6.08	7.56	7.65	7.79
50th-Percentile Queue Length [ft/ln]	27.46	239.09	97.67	156.37	155.43	945.67	82.21	171.1	171.1	152.0	189.03	191.19	194.86
95th-Percentile Queue Length [veh/ln]	1.98	14.64	7.03	10.36	10.31	50.94	5.92	11.14	11.14	10.13	12.07	12.18	12.37
95th-Percentile Queue Length [ft/ln]	49.42	365.88	175.80	258.91	257.66	1273.56	147.9	278.4	278.4	253.1	301.77	304.57	309.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.50	70.59	58.79	26.15	25.97	97.53	62.78	70.36	73.88	68.07	67.98	67.98
Movement LOS	D	E	E	C	C	F	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	65.79			68.93			70.10			68.03		
Approach LOS	E			E			E			E		
d_I, Intersection Delay [s/veh]	68.57											
Intersection LOS	E											
Intersection V/C	0.885											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersectio	2.310	2.815	4.275	2.666
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.43	39.69	50.30	44.75
l_b,int, Bicycle LOS Score for Intersection	2.188	3.716	2.869	2.046
Bicycle LOS	B	D	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	58.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	740	57	17	508	34	183	114	22	155	116	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	740	57	17	508	34	183	114	22	155	116	63
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	206	16	5	141	9	51	32	6	43	32	18
Total Analysis Volume [veh/h]	23	822	63	19	564	38	203	127	24	172	129	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			19			18			18		
v_di, Inbound Pedestrian Volume crossing m	18			18			19			18		
v_co, Outbound Pedestrian Volume crossing	25			20			26			21		
v_ci, Inbound Pedestrian Volume crossing mi	26			21			25			20		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	52			17			11			37		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	4	4	5	5	5	4	4	4	4	4	4
Maximum Green [s]	20	71	71	20	71	71	30	26	30	26	30	26
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	44	44	10	44	44	28	28	28	28	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.70	0.00	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	79	71	79	71	26	26	30	30
g / C, Green / Cycle	0.53	0.48	0.53	0.48	0.17	0.17	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.03	0.48	0.03	0.33	0.11	0.09	0.10	0.12
s, saturation flow rate [veh/h]	889	1828	709	1838	1781	1765	1781	1631
c, Capacity [veh/h]	332	875	148	876	311	308	359	328
d1, Uniform Delay [s]	21.82	38.83	34.16	30.36	57.30	55.52	52.60	54.13
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.40	33.19	0.39	4.38	10.24	5.49	4.54	8.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	1.01	0.13	0.69	0.65	0.49	0.48	0.61
d, Delay for Lane Group [s/veh]	22.22	72.02	34.55	34.74	67.54	61.02	57.14	62.19
Lane Group LOS	C	F	C	C	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	39.42	0.33	17.86	8.05	5.63	6.24	7.62
50th-Percentile Queue Length [ft/ln]	10.59	985.55	8.36	446.55	201.18	140.82	155.91	190.54
95th-Percentile Queue Length [veh/ln]	0.76	50.18	0.60	24.79	12.70	9.53	10.33	12.15
95th-Percentile Queue Length [ft/ln]	19.07	1254.46	15.05	619.83	317.49	238.13	258.29	303.73

Movement, Approach, & Intersection Results

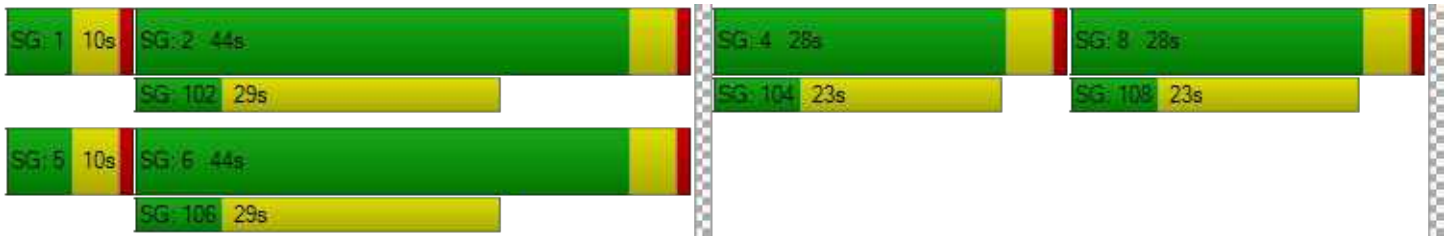
d_M, Delay for Movement [s/veh]	22.22	72.02	72.02	34.55	34.74	34.74	67.54	61.02	61.02	57.14	62.19	62.19
Movement LOS	C	E	E	C	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	70.76			34.73			64.76			59.85		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	58.10											
Intersection LOS	E											
Intersection V/C	0.746											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.88	63.88	63.88	63.88
l_p,int, Pedestrian LOS Score for Intersectio	2.531	2.497	2.161	2.132
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	528	313	313
d_b, Bicycle Delay [s]	41.43	40.70	53.28	53.99
l_b,int, Bicycle LOS Score for Intersection	3.058	2.584	2.144	2.172
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	10	271	85	15	342	72	64	145	9	87	192	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	271	85	15	342	72	64	145	9	87	192	49
Peak Hour Factor	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	81	25	4	102	21	19	43	3	26	57	15
Total Analysis Volume [veh/h]	12	323	101	18	408	86	76	173	11	104	229	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	13			32			14			33		
v_di, Inbound Pedestrian Volume crossing m	14			33			13			32		
v_co, Outbound Pedestrian Volume crossing	12			26			25			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			25			26			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			39			21			32		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	63	63	63	63
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	22	22	12	16
g / C, Green / Cycle	0.34	0.34	0.20	0.26
(v / s)_i Volume / Saturation Flow Rate	0.25	0.29	0.14	0.22
s, saturation flow rate [veh/h]	1769	1759	1830	1799
c, Capacity [veh/h]	666	663	363	470
d1, Uniform Delay [s]	18.09	19.15	23.60	21.98
k, delay calibration	0.11	0.16	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	2.91	2.64	2.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.77	0.72	0.83
d, Delay for Lane Group [s/veh]	19.19	22.06	26.24	24.91
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	Yes
50th-Percentile Queue Length [veh/ln]	5.32	6.90	3.70	5.39
50th-Percentile Queue Length [ft/ln]	132.95	172.42	92.56	134.71
95th-Percentile Queue Length [veh/ln]	9.10	11.20	6.66	9.20
95th-Percentile Queue Length [ft/ln]	227.50	280.09	166.61	229.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.19	19.19	19.19	22.06	22.06	22.06	26.24	26.24	26.24	24.91	24.91	24.91
Movement LOS	B	B	B	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.19			22.06			26.24			24.91		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.65											
Intersection LOS	C											
Intersection V/C	0.695											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.40	23.08	21.40	21.40
l_p,int, Pedestrian LOS Score for Intersectio	2.092	2.084	1.968	2.035
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	954	954	954	954
d_b, Bicycle Delay [s]	8.71	8.76	8.68	8.73
l_b,int, Bicycle LOS Score for Intersection	2.279	2.404	1.989	2.205
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	47.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.120

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	4	16	8	117	10	270	19	884	126	162	1778	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	8	117	10	270	19	884	126	162	1778	26
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	31	3	71	5	231	33	42	465	7
Total Analysis Volume [veh/h]	4	17	8	122	10	282	20	925	132	169	1860	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	40	0	0	40	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	40	0	0	40	0	15	85	0	25	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	34	34	34	34	6	84	84	16	94	94
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.04	0.56	0.56	0.11	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	6.57	0.18	0.01	0.26	0.08	0.09	0.35	0.35
s, saturation flow rate [veh/h]	460	1589	20	1564	1781	3560	1556	1781	3560	1854
c, Capacity [veh/h]	132	359	51	353	67	1995	872	191	2243	1168
d1, Uniform Delay [s]	47.65	45.19	73.62	54.65	69.30	10.25	8.79	63.33	5.69	5.70
k, delay calibration	0.11	0.11	0.50	0.20	0.11	0.50	0.50	0.15	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.02	774.63	7.41	2.44	0.78	0.37	15.92	0.99	1.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.02	2.60	0.80	0.30	0.46	0.15	0.88	0.55	0.55
d, Delay for Lane Group [s/veh]	48.20	45.21	848.24	62.06	71.75	11.03	9.16	79.25	6.68	7.59
Lane Group LOS	D	D	F	E	E	B	A	E	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.66	0.24	12.88	10.79	0.79	5.06	1.32	7.01	4.28	4.77
50th-Percentile Queue Length [ft/ln]	16.45	6.10	322.05	269.74	19.70	126.51	33.10	175.20	107.08	119.20
95th-Percentile Queue Length [veh/ln]	1.18	0.44	23.19	16.18	1.42	8.75	2.38	11.35	7.68	8.35
95th-Percentile Queue Length [ft/ln]	29.62	10.98	579.69	404.42	35.47	218.75	59.58	283.73	191.93	208.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.20	48.20	45.21	848.24	848.24	62.06	71.75	11.03	9.16	79.25	6.98	7.59
Movement LOS	D	D	D	F	F	E	E	B	A	E	A	A
d_A, Approach Delay [s/veh]	47.38			312.73			11.93			12.93		
Approach LOS	D			F			B			B		
d_I, Intersection Delay [s/veh]	47.62											
Intersection LOS	D											
Intersection V/C	7.120											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.40	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.979	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1040	1173
d_b, Bicycle Delay [s]	44.85	44.94	17.29	12.83
l_b,int, Bicycle LOS Score for Intersection	1.607	2.243	2.448	2.690
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	52.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	305	190	107	55	238	39	112	751	37	192	1152	295
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	305	190	107	55	238	39	112	751	37	192	1152	295
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	51	29	15	64	10	30	202	10	52	310	79
Total Analysis Volume [veh/h]	328	204	115	59	256	42	120	808	40	206	1239	317
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			2			5			3		
v_di, Inbound Pedestrian Volume crossing m	5			3			5			2		
v_co, Outbound Pedestrian Volume crossing	2			6			6			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			6			6			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	18			15			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	32	0	0	32	0	15	71	0	15	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	28	28	28	26	26	26	12	70	70	11	69	69
g / C, Green / Cycle	0.19	0.19	0.19	0.17	0.17	0.17	0.08	0.46	0.46	0.07	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.08	0.03	0.14	0.03	0.07	0.23	0.03	0.12	0.35	0.21
s, saturation flow rate [veh/h]	1781	1847	1513	1781	1870	1527	1781	3560	1533	1781	3560	1539
c, Capacity [veh/h]	336	349	285	308	323	264	137	1650	710	131	1641	709
d1, Uniform Delay [s]	57.92	57.88	53.27	53.12	59.51	52.75	66.64	18.96	15.68	67.69	22.86	18.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.91	3.72	0.92	0.30	4.37	0.28	15.44	1.04	0.15	263.52	3.29	2.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.78	0.40	0.19	0.79	0.16	0.87	0.49	0.06	1.57	0.76	0.45
d, Delay for Lane Group [s/veh]	61.84	61.60	54.18	53.42	63.88	53.03	82.08	20.00	15.83	331.21	26.15	20.68
Lane Group LOS	E	E	D	D	E	D	F	C	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.85	10.15	3.91	1.97	9.84	1.39	5.00	7.06	0.59	14.54	14.88	5.68
50th-Percentile Queue Length [ft/ln]	246.23	253.82	97.65	49.20	245.88	34.84	125.12	176.49	14.70	363.53	371.94	141.99
95th-Percentile Queue Length [veh/ln]	15.00	15.38	7.03	3.54	14.98	2.51	8.67	11.42	1.06	23.61	21.20	9.59
95th-Percentile Queue Length [ft/ln]	374.91	384.46	175.77	88.57	374.46	62.72	216.85	285.43	26.47	590.35	530.09	239.70

Movement, Approach, & Intersection Results

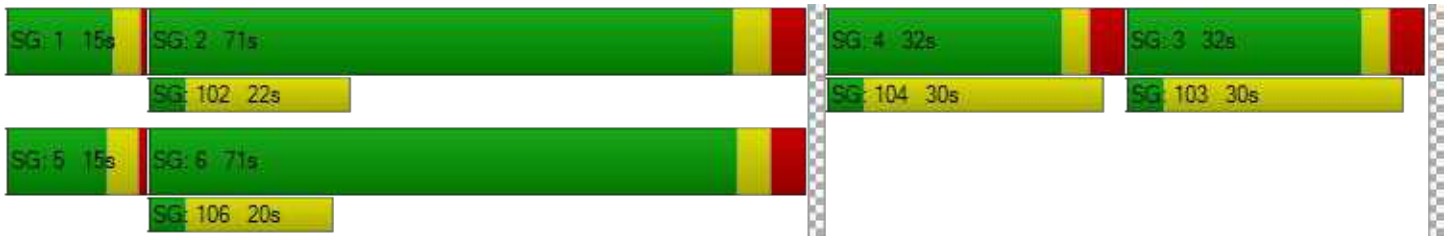
d_M, Delay for Movement [s/veh]	61.79	61.60	54.18	53.42	63.88	53.03	82.08	20.00	15.83	331.21	26.15	20.68
Movement LOS	E	E	D	D	E	D	F	C	B	F	C	C
d_A, Approach Delay [s/veh]	60.38			60.88			27.52			60.83		
Approach LOS	E			E			C			E		
d_I, Intersection Delay [s/veh]	52.12											
Intersection LOS	D											
Intersection V/C	0.718											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.25	67.25	67.25	67.25
l_p,int, Pedestrian LOS Score for Intersectio	2.484	2.321	2.930	2.957
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	340	850	845
d_b, Bicycle Delay [s]	52.17	52.09	24.85	25.14
l_b,int, Bicycle LOS Score for Intersection	2.627	2.149	2.358	3.013
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	97	246	58	108	288	51	108	784	81	130	1029	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	246	58	108	288	51	108	784	81	130	1029	87
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	66	16	29	77	14	29	211	22	35	277	23
Total Analysis Volume [veh/h]	104	265	62	116	310	55	116	843	87	140	1106	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	19			38			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	130.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	28	35	0	28	35	0	12	67	0	20	75	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	34	34	12	30	30	8	74	74	14	79	79
g / C, Green / Cycle	0.10	0.22	0.22	0.08	0.20	0.20	0.05	0.49	0.49	0.09	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.04	0.07	0.17	0.04	0.07	0.24	0.05	0.08	0.31	0.06
s, saturation flow rate [veh/h]	1781	1870	1540	1781	1870	1503	1781	3560	1589	1781	3560	1544
c, Capacity [veh/h]	186	418	344	141	370	298	97	1748	780	163	1881	816
d1, Uniform Delay [s]	63.97	52.78	47.14	68.14	57.92	50.05	68.34	7.92	7.10	64.99	13.95	10.89
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	1.60	0.25	11.15	5.03	0.30	109.38	0.96	0.29	12.02	1.35	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.63	0.18	0.82	0.84	0.18	1.20	0.48	0.11	0.86	0.59	0.12
d, Delay for Lane Group [s/veh]	66.56	54.38	47.39	79.29	62.95	50.34	177.72	8.87	7.39	77.00	15.30	11.18
Lane Group LOS	E	D	D	E	E	D	F	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.96	9.36	1.94	4.88	11.96	1.78	6.53	3.23	0.64	5.67	8.33	1.09
50th-Percentile Queue Length [ft/ln]	99.09	233.93	48.51	121.88	299.12	44.48	163.30	80.74	16.01	141.84	208.20	27.22
95th-Percentile Queue Length [veh/ln]	7.13	14.37	3.49	8.50	17.64	3.20	11.28	5.81	1.15	9.58	13.06	1.96
95th-Percentile Queue Length [ft/ln]	178.37	359.35	87.31	212.40	440.94	80.07	281.89	145.33	28.83	239.50	326.52	49.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.56	54.38	47.39	79.29	62.95	50.34	177.72	8.87	7.39	77.00	15.30	11.18
Movement LOS	E	D	D	E	E	D	F	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.31			65.45			27.48			21.46		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	34.34											
Intersection LOS	C											
Intersection V/C	0.616											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.28	67.28	67.28	67.28
l_p,int, Pedestrian LOS Score for Intersectio	2.350	2.355	2.858	2.860
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	365	791	898
d_b, Bicycle Delay [s]	50.65	51.14	27.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.271	2.353	2.423	2.665
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	7.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	25	15	110	57	26	45	0	940	74	0	1214	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	15	110	57	26	45	0	940	74	0	1214	60
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	1.0000	0.9130	0.9130	1.0000	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	30	16	7	12	0	257	20	0	332	16
Total Analysis Volume [veh/h]	27	16	120	62	28	49	0	1030	81	0	1330	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			8			7			0		
v_di, Inbound Pedestrian Volume crossing m	0			7			8			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			36			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	143.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	37	0	0	37	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	16	16	16	13	13	107	107	107	107
g / C, Green / Cycle	0.11	0.11	0.11	0.09	0.09	0.72	0.72	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.08	0.03	0.05	0.29	0.05	0.37	0.04
s, saturation flow rate [veh/h]	1781	1870	1525	1781	1560	3560	1540	3560	1554
c, Capacity [veh/h]	194	204	166	156	136	2548	1102	2548	1112
d1, Uniform Delay [s]	60.48	60.08	64.43	64.75	65.74	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	0.16	5.79	1.64	3.63	0.48	0.13	0.77	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.08	0.72	0.40	0.56	0.40	0.07	0.52	0.06
d, Delay for Lane Group [s/veh]	60.81	60.24	70.22	66.39	69.37	0.48	0.13	0.77	0.10
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.96	0.56	4.71	2.34	3.00	0.17	0.04	0.27	0.03
50th-Percentile Queue Length [ft/ln]	23.92	14.05	117.87	58.62	75.11	4.23	0.99	6.80	0.79
95th-Percentile Queue Length [veh/ln]	1.72	1.01	8.28	4.22	5.41	0.30	0.07	0.49	0.06
95th-Percentile Queue Length [ft/ln]	43.06	25.30	206.90	105.51	135.20	7.62	1.78	12.24	1.42

Movement, Approach, & Intersection Results

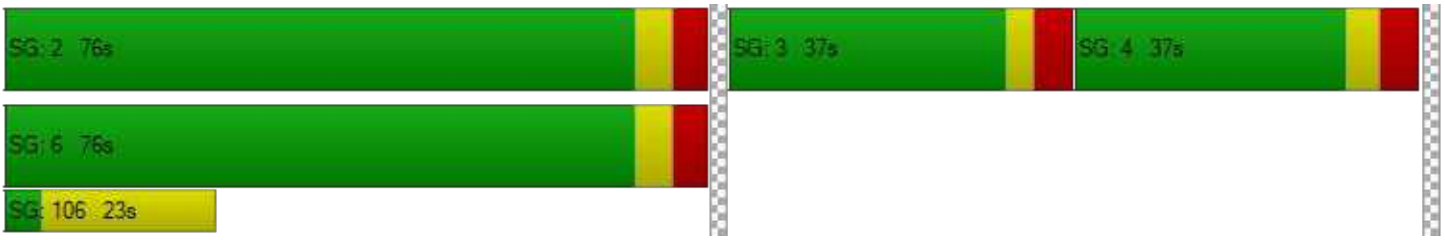
d_M, Delay for Movement [s/veh]	60.81	60.24	70.22	66.39	69.37	69.37	0.00	0.48	0.13	0.00	0.77	0.10
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	67.68			68.04			0.45			0.74		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.84											
Intersection LOS	A											
Intersection V/C	0.515											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.030	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	392	912	912
d_b, Bicycle Delay [s]	48.36	49.39	22.23	22.26
l_b,int, Bicycle LOS Score for Intersection	1.829	1.789	2.476	2.711
Bicycle LOS	A	A	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	53.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	351	70	393	218	57	112	919	573	240	976	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	351	70	393	218	57	112	919	573	240	976	18
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	99	20	111	61	16	32	259	161	68	275	5
Total Analysis Volume [veh/h]	72	395	79	443	245	64	126	1035	645	270	1099	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			10			0			10		
v_di, Inbound Pedestrian Volume crossing m	0			10			0			10		
v_co, Outbound Pedestrian Volume crossing	12			0			0			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			0			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	41			11			1			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		No			Yes		No	Yes		No	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	60	60	24	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.40	0.40	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.13	0.13	0.04	0.07	0.29	0.41	0.15	0.31	0.01
s, saturation flow rate [veh/h]	1846	1736	3459	1870	1503	1781	3560	1570	1781	3560	1512
c, Capacity [veh/h]	295	278	665	360	289	202	1425	628	285	1591	676
d1, Uniform Delay [s]	62.28	62.63	56.11	56.30	50.98	60.67	28.74	34.62	54.38	13.70	10.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.67	46.37	5.21	9.98	1.76	13.67	3.27	42.95	41.35	2.48	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.97	0.67	0.68	0.22	0.62	0.73	1.03	0.95	0.69	0.03
d, Delay for Lane Group [s/veh]	100.95	108.99	61.32	66.29	52.74	74.34	32.00	77.57	95.73	16.19	10.74
Lane Group LOS	F	F	E	E	D	E	C	F	F	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.65	13.79	8.29	9.67	2.19	5.15	13.58	27.82	12.44	6.75	0.20
50th-Percentile Queue Length [ft/ln]	341.23	344.86	207.34	241.70	54.80	128.63	339.61	695.46	311.02	168.76	5.02
95th-Percentile Queue Length [veh/ln]	19.71	19.89	13.02	14.77	3.95	8.87	19.63	37.20	18.23	11.01	0.36
95th-Percentile Queue Length [ft/ln]	492.70	497.14	325.41	369.18	98.65	221.63	490.72	929.90	455.64	275.29	9.04

Movement, Approach, & Intersection Results

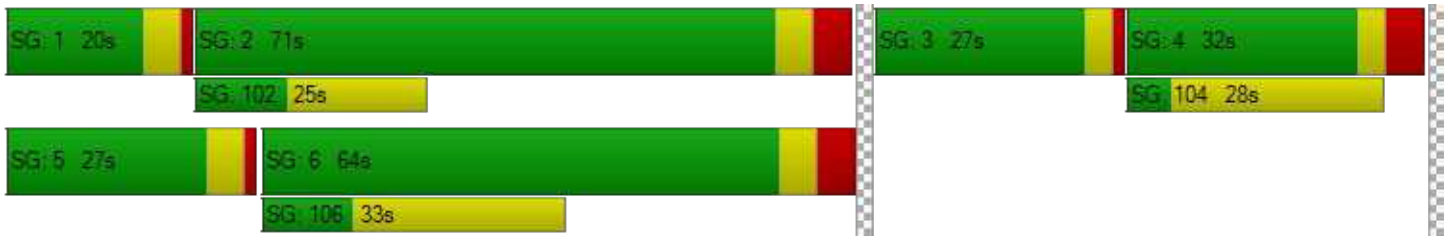
d_M, Delay for Movement [s/veh]	100.95	104.82	108.99	61.32	66.29	52.74	74.34	32.00	77.57	95.73	16.19	10.74
Movement LOS	F	F	F	E	E	D	E	C	F	F	B	B
d_A, Approach Delay [s/veh]	104.91			62.21			51.23			31.57		
Approach LOS	F			E			D			C		
d_I, Intersection Delay [s/veh]	53.51											
Intersection LOS	D											
Intersection V/C	0.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.267	2.811	0.000	2.964
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.90	52.38	29.54	25.35
l_b,int, Bicycle LOS Score for Intersection	2.010	2.800	3.050	2.706
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	6.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.412

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	38	16	33	6	4	50	29	1372	19	79	1459	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	16	33	6	4	50	29	1372	19	79	1459	25
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9500	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	4	9	2	1	13	8	367	5	21	391	7
Total Analysis Volume [veh/h]	41	17	35	6	4	54	31	1469	20	85	1562	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	6			4			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			4			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			0			3			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	40	40	40	40	40	40	24	86	86	24	86	86
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	15	15	15	7	116	116	9	118	118
g / C, Green / Cycle	0.10	0.10	0.10	0.05	0.77	0.77	0.06	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.06	0.01	0.03	0.02	0.27	0.28	0.05	0.29	0.29
s, saturation flow rate [veh/h]	1519	1420	1580	1781	3560	1855	1781	3560	1851
c, Capacity [veh/h]	188	182	160	87	2749	1432	106	2787	1448
d1, Uniform Delay [s]	64.37	60.95	62.76	67.86	0.00	0.00	68.18	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.01	0.12	1.24	2.44	0.36	0.69	12.92	0.39	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.05	0.34	0.36	0.36	0.36	0.80	0.37	0.38
d, Delay for Lane Group [s/veh]	66.38	61.08	64.00	70.30	0.36	0.69	81.10	0.39	0.75
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	0.36	2.03	1.19	0.14	0.28	3.53	0.15	0.30
50th-Percentile Queue Length [ft/ln]	88.71	9.02	50.66	29.79	3.45	6.91	88.26	3.74	7.50
95th-Percentile Queue Length [veh/ln]	6.39	0.65	3.65	2.15	0.25	0.50	6.35	0.27	0.54
95th-Percentile Queue Length [ft/ln]	159.68	16.24	91.18	53.63	6.21	12.43	158.87	6.74	13.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.38	66.38	66.38	61.08	61.08	64.00	70.30	0.47	0.69	81.10	0.51	0.75
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	66.38			63.54			1.90			4.60		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	6.22											
Intersection LOS	A											
Intersection V/C	0.412											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	64.41
l_p,int, Pedestrian LOS Score for Intersectio	1.804	1.996	0.000	3.203
Crosswalk LOS	A	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1052	1052
d_b, Bicycle Delay [s]	45.22	44.86	16.88	16.90
l_b,int, Bicycle LOS Score for Intersection	1.713	1.665	2.396	2.480
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	166	2	224	0	2	0	191	1209	4	2	1344	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	2	224	0	2	0	191	1209	4	2	1344	98
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	1	59	0	1	0	50	318	1	1	353	26
Total Analysis Volume [veh/h]	175	2	236	0	2	0	201	1271	4	2	1413	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			0			3			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	10	0	0	10	0	4	10	0	4	15	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	40	40	0	0	40	0	35	75	0	35	75	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	28	28	28	28	19	112	112	0	93	93
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.13	0.74	0.74	0.00	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.00	0.00	0.11	0.23	0.23	0.00	0.28	0.28
s, saturation flow rate [veh/h]	1415	1563	1142	1870	1781	3560	1867	1781	3560	1796
c, Capacity [veh/h]	291	290	79	347	225	2651	1390	5	2211	1115
d1, Uniform Delay [s]	58.67	58.73	0.00	49.84	61.39	0.14	0.14	74.61	5.90	5.90
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.98	5.77	0.00	0.01	11.63	0.31	0.60	45.45	0.68	1.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.82	0.00	0.01	0.89	0.32	0.32	0.40	0.45	0.46
d, Delay for Lane Group [s/veh]	60.66	64.50	0.00	49.85	73.02	0.45	0.74	120.06	6.57	7.26
Lane Group LOS	E	E	A	D	E	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.47	9.19	0.00	0.06	8.02	0.20	0.32	0.14	3.52	3.78
50th-Percentile Queue Length [ft/ln]	161.87	229.67	0.00	1.57	200.42	5.01	7.99	3.49	88.08	94.61
95th-Percentile Queue Length [veh/ln]	10.65	14.16	0.00	0.11	12.66	0.36	0.58	0.25	6.34	6.81
95th-Percentile Queue Length [ft/ln]	266.20	353.94	0.00	2.83	316.51	9.02	14.38	6.28	158.54	170.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.66	64.50	64.50	0.00	49.85	49.85	73.02	0.55	0.74	120.06	6.77	7.26
Movement LOS	E	E	E	A	D	D	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	62.87			49.85			10.42			6.95		
Approach LOS	E			D			B			A		
d_I, Intersection Delay [s/veh]	15.25											
Intersection LOS	B											
Intersection V/C	0.588											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.969	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	905	905
d_b, Bicycle Delay [s]	44.97	44.86	22.51	22.52
l_b,int, Bicycle LOS Score for Intersection	2.241	1.563	2.371	2.395
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	4.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.404

Intersection Setup

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	17	1	38	3	0	3	85	1390	3	27	1540	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	6.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1	38	3	0	3	85	1390	3	27	1540	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	10	1	0	1	22	366	1	7	405	3
Total Analysis Volume [veh/h]	18	1	40	3	0	3	89	1463	3	28	1621	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			5			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	35	0	0	35	0	15	105	0	15	105	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	9	122	122	3	116	116
g / C, Green / Cycle	0.09	0.09	0.09	0.06	0.81	0.81	0.02	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.00	0.05	0.27	0.27	0.02	0.30	0.30
s, saturation flow rate [veh/h]	1520	1589	1371	1781	3560	1868	1781	3560	1861
c, Capacity [veh/h]	182	141	158	109	2886	1514	37	2740	1432
d1, Uniform Delay [s]	62.96	63.87	62.49	68.02	0.00	0.00	72.60	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	1.08	0.10	13.32	0.31	0.59	27.36	0.42	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.28	0.04	0.81	0.33	0.33	0.76	0.39	0.39
d, Delay for Lane Group [s/veh]	63.21	64.95	62.58	81.33	0.31	0.59	99.96	0.42	0.81
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.69	1.49	0.22	3.70	0.12	0.25	1.34	0.16	0.32
50th-Percentile Queue Length [ft/ln]	17.28	37.29	5.49	92.53	3.12	6.24	33.59	4.02	8.04
95th-Percentile Queue Length [veh/ln]	1.24	2.68	0.40	6.66	0.22	0.45	2.42	0.29	0.58
95th-Percentile Queue Length [ft/ln]	31.10	67.12	9.88	166.55	5.62	11.22	60.47	7.24	14.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.21	63.21	64.95	62.58	62.58	62.58	81.33	0.41	0.59	99.96	0.55	0.81
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.39			62.58			5.04			2.23		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	4.79											
Intersection LOS	A											
Intersection V/C	0.404											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.010	1.750	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	373	373	1307	1307
d_b, Bicycle Delay [s]	49.62	49.62	9.04	9.04
l_b,int, Bicycle LOS Score for Intersection	1.657	1.570	2.415	2.474
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	378	411	77	275	229	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.93	1.92	2.00	1.94	1.90	1.74
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	411	77	275	229	95
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	110	21	74	61	25
Total Analysis Volume [veh/h]	405	440	82	294	245	102
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		12	
v_di, Inbound Pedestrian Volume crossing m	0		0		11	
v_co, Outbound Pedestrian Volume crossing	11		11		10	
v_ci, Inbound Pedestrian Volume crossing mi	12		10		11	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		91		16	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	12	12	2	18	8	8
g / C, Green / Cycle	0.35	0.35	0.06	0.53	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.22	0.29	0.05	0.16	0.14	0.07
s, saturation flow rate [veh/h]	1871	1540	1781	1871	1782	1449
c, Capacity [veh/h]	648	533	115	995	403	328
d1, Uniform Delay [s]	9.23	10.00	15.54	4.40	11.75	10.83
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.26	3.10	0.06	0.55	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.83	0.72	0.30	0.61	0.31
d, Delay for Lane Group [s/veh]	9.60	11.26	18.64	4.47	12.31	11.03
Lane Group LOS	A	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.86	2.30	0.62	0.62	1.37	0.52
50th-Percentile Queue Length [ft/ln]	46.56	57.49	15.60	15.54	34.21	12.98
95th-Percentile Queue Length [veh/ln]	3.35	4.14	1.12	1.12	2.46	0.93
95th-Percentile Queue Length [ft/ln]	83.80	103.47	28.09	27.97	61.58	23.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.60	11.26	18.64	4.47	12.31	11.03
Movement LOS	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	10.47		7.56		11.93	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	10.09					
Intersection LOS	B					
Intersection V/C	0.532					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	9.07	0.91
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.125	2.029
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1778	2371	1482
d_b, Bicycle Delay [s]	0.21	0.61	1.14
l_b,int, Bicycle LOS Score for Intersection	2.954	2.180	1.560
Bicycle LOS	C	B	A

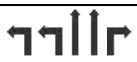
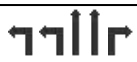
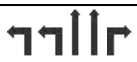
Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: Santa Cruz Ave/Sand Hill Rd

Control Type:	Signalized	Delay (sec / veh):	47.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	256	924	171	258	472	53	112	635	435	178	518	173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	256	924	171	258	472	53	112	635	435	178	518	173
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	237	44	66	121	14	29	163	111	46	133	44
Total Analysis Volume [veh/h]	262	947	175	264	484	54	115	651	446	182	531	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			3			1		
v_di, Inbound Pedestrian Volume crossing m	1			3			4			2		
v_co, Outbound Pedestrian Volume crossing	2			3			3			4		
v_ci, Inbound Pedestrian Volume crossing mi	3			4			2			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	33			33			29			49		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.6	4.3	4.3	3.6	4.3	4.3	3.6	4.1	4.1	3.6	4.1	4.1
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	19	47	47	20	48	48	13	53	53	20	60	60
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	4.3	4.3	2.6	4.3	4.3	2.6	4.1	4.1	2.6	4.1	4.1
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	6.30	6.30	4.60	6.30	6.30	4.60	6.10	6.10	4.60	6.10	6.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	4.30	4.30	2.60	4.30	4.30	2.60	4.10	4.10	2.60	4.10	4.10
g_i, Effective Green Time [s]	13	53	53	13	53	53	7	43	43	10	46	46
g / C, Green / Cycle	0.09	0.38	0.38	0.09	0.38	0.38	0.05	0.31	0.31	0.07	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.11	0.08	0.14	0.04	0.03	0.18	0.29	0.05	0.15	0.12
s, saturation flow rate [veh/h]	3459	3560	1534	3459	3560	1532	3459	3560	1526	3459	3560	1513
c, Capacity [veh/h]	312	1355	584	316	1359	584	162	1085	465	239	1164	495
d1, Uniform Delay [s]	62.70	36.60	30.19	62.59	30.98	27.71	65.78	41.41	47.04	64.03	37.27	35.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.32	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.03	3.02	1.31	5.84	0.73	0.31	5.58	0.54	24.88	4.95	0.28	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.70	0.30	0.84	0.36	0.09	0.71	0.60	0.96	0.76	0.46	0.36
d, Delay for Lane Group [s/veh]	68.73	39.61	31.50	68.43	31.71	28.03	71.35	41.94	71.92	68.97	37.55	36.12
Lane Group LOS	E	D	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.84	14.11	4.34	4.86	6.00	1.22	2.15	9.61	18.04	3.34	7.24	4.65
50th-Percentile Queue Length [ft/ln]	120.89	352.66	108.51	121.56	150.11	30.54	53.64	240.18	451.05	83.58	180.97	116.30
95th-Percentile Queue Length [veh/ln]	8.44	20.27	7.76	8.48	10.02	2.20	3.86	14.69	25.01	6.02	11.65	8.19
95th-Percentile Queue Length [ft/ln]	211.06	506.66	193.93	211.96	250.58	54.98	96.54	367.26	625.20	150.44	291.28	204.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.73	39.61	31.50	68.43	31.71	28.03	71.35	41.94	71.92	68.97	37.55	36.12
Movement LOS	E	D	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	44.10			43.55			55.76			43.69		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	47.21											
Intersection LOS	D											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.44	59.44	59.44	59.44
l_p,int, Pedestrian LOS Score for Intersectio	2.966	3.085	2.970	2.917
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	596	670	770
d_b, Bicycle Delay [s]	35.81	35.09	31.41	27.14
l_b,int, Bicycle LOS Score for Intersection	2.701	2.221	2.560	2.294
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	101.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.307

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	134	15	226	0	17	169	11	0	10	178	279
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	134	15	226	0	17	169	11	0	10	178	279
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	4	63	0	5	47	3	0	3	49	78
Total Analysis Volume [veh/h]	0	149	17	251	0	19	188	12	0	11	198	310
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	496	394	519
Degree of Utilization, x	0.84	0.56	1.14

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.53	3.27	18.63
95th-Percentile Queue Length [ft]	213.35	81.78	465.70
Approach Delay [s/veh]	38.09	23.02	115.10
Approach LOS	E	C	F
Intersection Delay [s/veh]	101.17		
Intersection LOS	F		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	405	94	3	0	5	68	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	405	94	3	0	5	68	3	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	26	1	0	1	19	1	0
Total Analysis Volume [veh/h]	450	104	3	0	6	76	3	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	557	393
Degree of Utilization, x	1.31	0.22

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	24.79	0.81
95th-Percentile Queue Length [ft]	619.78	20.25
Approach Delay [s/veh]	179.33	14.66
Approach LOS	F	B
Intersection Delay [s/veh]	101.17	
Intersection LOS	F	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	131	387	119	46	418	58	96	100	42	64	58	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	387	119	46	418	58	96	100	42	64	58	93
Peak Hour Factor	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	113	35	13	123	17	28	29	12	19	17	27
Total Analysis Volume [veh/h]	154	454	140	54	490	68	113	117	49	75	68	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	27			0			0			27		
v_di, Inbound Pedestrian Volume crossing m	27			0			0			27		
v_co, Outbound Pedestrian Volume crossing	6			0			6			0		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			6			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	26			2			7			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	54	54	54	54	54	54	54
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	23	29	21	16	16	16
g / C, Green / Cycle	0.54	0.43	0.54	0.38	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.14	0.34	0.06	0.31	0.25	0.06	0.11
s, saturation flow rate [veh/h]	1065	1767	961	1825	1138	1219	1559
c, Capacity [veh/h]	541	753	479	692	428	147	459
d1, Uniform Delay [s]	8.78	13.55	8.39	15.15	18.70	15.72	15.33
k, delay calibration	0.23	0.26	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.61	4.46	0.10	4.80	1.69	2.70	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.79	0.11	0.81	0.65	0.51	0.39
d, Delay for Lane Group [s/veh]	9.39	18.02	8.49	19.95	20.38	18.42	15.86
Lane Group LOS	A	B	A	B	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.74	5.93	0.23	5.98	3.30	0.81	1.67
50th-Percentile Queue Length [ft/ln]	18.52	148.27	5.70	149.50	82.51	20.16	41.72
95th-Percentile Queue Length [veh/ln]	1.33	9.92	0.41	9.99	5.94	1.45	3.00
95th-Percentile Queue Length [ft/ln]	33.33	248.12	10.26	249.77	148.52	36.28	75.10

Movement, Approach, & Intersection Results

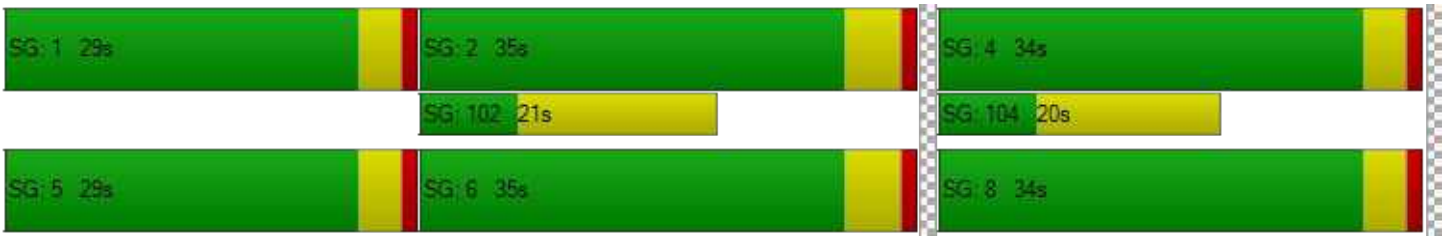
d_M, Delay for Movement [s/veh]	9.39	18.02	18.02	8.49	19.95	19.95	20.38	20.38	20.38	18.42	15.86	15.86
Movement LOS	A	B	B	A	B	B	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	16.24			18.94			20.38			16.62		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	17.78											
Intersection LOS	B											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.36	0.00	17.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.626	0.000	1.942	0.000
Crosswalk LOS	B	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1101	1101	1101	1101
d_b, Bicycle Delay [s]	5.58	5.51	5.53	5.51
l_b,int, Bicycle LOS Score for Intersection	2.794	2.569	2.020	1.975
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		35.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	454	521	65	260	979	551
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	521	65	260	979	551
Peak Hour Factor	0.9660	0.9660	0.9660	0.9660	0.9660	0.9660
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	135	17	67	253	143
Total Analysis Volume [veh/h]	470	539	67	269	1013	570
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	43		21		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	5	5	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	55	25	55	60	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	31	31	31	20	54	76	76
g / C, Green / Cycle	0.22	0.22	0.22	0.14	0.39	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.18	0.04	0.17	0.28	0.37
s, saturation flow rate [veh/h]	1781	1831	1870	1781	1574	3560	1561
c, Capacity [veh/h]	392	403	411	249	612	1933	847
d1, Uniform Delay [s]	52.13	52.13	52.13	53.72	31.39	20.42	22.78
k, delay calibration	0.11	0.11	0.11	0.11	0.30	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.78	4.66	4.57	0.57	1.37	1.02	4.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.84	0.84	0.27	0.44	0.52	0.67
d, Delay for Lane Group [s/veh]	56.91	56.79	56.70	54.29	32.76	21.44	27.03
Lane Group LOS	E	E	E	D	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.36	11.66	11.90	2.15	6.91	10.49	13.82
50th-Percentile Queue Length [ft/ln]	283.94	291.61	297.49	53.75	172.80	262.15	345.49
95th-Percentile Queue Length [veh/ln]	16.88	17.27	17.56	3.87	11.22	15.80	19.92
95th-Percentile Queue Length [ft/ln]	422.11	431.64	438.92	96.75	280.59	394.92	497.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.88	56.73	54.29	32.76	21.44	27.03
Movement LOS	E	E	D	C	C	C
d_A, Approach Delay [s/veh]	56.80		37.05		23.45	
Approach LOS	E		D		C	
d_I, Intersection Delay [s/veh]	36.50					
Intersection LOS	D					
Intersection V/C	0.735					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	721	299	788
d_b, Bicycle Delay [s]	29.26	51.15	25.89
l_b,int, Bicycle LOS Score for Intersection	2.392	1.560	2.866
Bicycle LOS	B	A	C

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Base Volume Input [veh/h]	1410	0	0	770	734	674
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1410	0	0	770	734	674
Peak Hour Factor	0.9640	1.0000	1.0000	0.9640	0.9640	0.9640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	366	0	0	200	190	175
Total Analysis Volume [veh/h]	1463	0	0	799	761	699
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	60	0	0	60	60	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	60	60	26	26
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.41	0.22	0.22	0.25
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2369	2369	985	801
d1, Uniform Delay [s]	8.57	6.51	29.57	30.69
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.22	0.39	0.50	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.34	0.77	0.87
d, Delay for Lane Group [s/veh]	9.79	6.89	30.06	31.89
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.20	2.95	7.40	7.12
50th-Percentile Queue Length [ft/ln]	179.98	73.68	184.97	178.07
95th-Percentile Queue Length [veh/ln]	11.60	5.30	11.86	11.50
95th-Percentile Queue Length [ft/ln]	289.98	132.62	296.50	287.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.79	0.00	0.00	6.89	30.06	31.89
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	9.79		6.89		30.94	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	17.46					
Intersection LOS	B					
Intersection V/C	0.715					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.49	34.71
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.854	2.487
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	564	1239
d_b, Bicycle Delay [s]	23.25	23.22	6.52
l_b,int, Bicycle LOS Score for Intersection	2.767	2.219	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	208	23	211	154	13	18	169	414	21	172	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	208	23	211	154	13	18	169	414	21	172	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	55	6	56	41	3	5	45	109	6	45	3
Total Analysis Volume [veh/h]	12	220	24	223	163	14	19	179	438	22	182	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	418	448	432	463	486	540	451
Degree of Utilization, x	0.03	0.54	0.52	0.38	0.41	0.81	0.48

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.09	3.18	2.89	1.77	1.96	7.93	2.54
95th-Percentile Queue Length [ft]	2.21	79.60	72.25	44.22	49.03	198.20	63.50
Approach Delay [s/veh]	19.51		17.68		26.69		18.12
Approach LOS	C		C		D		C
Intersection Delay [s/veh]	21.85						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.998

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	843	702	0	1780	542	0	0	0	543	0	341
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	843	702	0	1780	542	0	0	0	543	0	341
Peak Hour Factor	1.0000	0.9190	0.9190	1.0000	0.9190	0.9190	1.0000	1.0000	1.0000	0.9190	1.0000	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	229	191	0	484	147	0	0	0	148	0	93
Total Analysis Volume [veh/h]	0	917	764	0	1937	590	0	0	0	591	0	371
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	23	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	56	56	56		16	16
g / C, Green / Cycle	0.70	0.70	0.70		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.18	0.38	0.63		0.17	0.13
s, saturation flow rate [veh/h]	5094	5094	941		3459	2813
c, Capacity [veh/h]	3542	3542	654		707	575
d1, Uniform Delay [s]	4.51	5.97	9.92		30.46	29.10
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.18	0.61	17.92		2.71	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.55	0.90		0.84	0.65
d, Delay for Lane Group [s/veh]	4.69	6.58	27.84		33.17	30.32
Lane Group LOS	A	A	C		C	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	1.50	4.24	9.39		5.53	3.25
50th-Percentile Queue Length [ft/ln]	37.60	106.03	234.78		138.25	81.34
95th-Percentile Queue Length [veh/ln]	2.71	7.62	14.42		9.39	5.86
95th-Percentile Queue Length [ft/ln]	67.68	190.46	360.42		234.66	146.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	4.69	0.00	0.00	6.58	27.84	0.00	0.00	0.00	33.17	0.00	30.32
Movement LOS		A			A	C				C		C
d_A, Approach Delay [s/veh]	2.66			11.55			0.00			32.07		
Approach LOS	A			B			A			C		
d_I, Intersection Delay [s/veh]	14.18											
Intersection LOS	B											
Intersection V/C	0.998											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.039	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1327	1327	0	476
d_b, Bicycle Delay [s]	4.55	4.53	39.95	23.21
l_b,int, Bicycle LOS Score for Intersection	2.064	2.949	4.132	1.560
Bicycle LOS	B	C	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Base Volume Input [veh/h]	0	1023	343	0	1650	446	0	0	0	660	0	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1023	343	0	1650	446	0	0	0	660	0	606
Peak Hour Factor	1.0000	0.9580	0.9580	1.0000	0.9580	0.9580	1.0000	1.0000	1.0000	0.9580	1.0000	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	267	90	0	431	116	0	0	0	172	0	158
Total Analysis Volume [veh/h]	0	1068	358	0	1722	466	0	0	0	689	0	633
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	50	0	0	58	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	50	0	0	50	0	0	0	0	20	0	10
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	46	46	56		16	26
g / C, Green / Cycle	0.58	0.58	0.70		0.20	0.32
(v / s)_i Volume / Saturation Flow Rate	0.21	0.23	0.61		0.20	0.22
s, saturation flow rate [veh/h]	5094	1589	2828		3459	2813
c, Capacity [veh/h]	2936	916	1980		692	911
d1, Uniform Delay [s]	9.09	9.27	9.21		31.98	23.62
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.35	1.25	5.55		14.96	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.39	0.87		1.00	0.70
d, Delay for Lane Group [s/veh]	9.44	10.52	14.75		46.95	24.59
Lane Group LOS	A	B	B		D	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.04	3.34	6.57		7.85	5.08
50th-Percentile Queue Length [ft/ln]	76.09	83.60	164.24		196.18	126.97
95th-Percentile Queue Length [veh/ln]	5.48	6.02	10.77		12.44	8.77
95th-Percentile Queue Length [ft/ln]	136.97	150.48	269.33		311.03	219.37

Movement, Approach, & Intersection Results

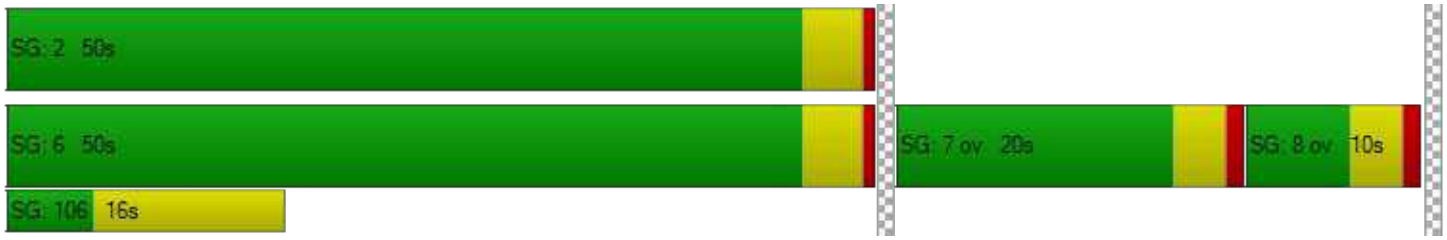
d_M, Delay for Movement [s/veh]	0.00	9.44	10.52	0.00	14.75	0.00	0.00	0.00	0.00	46.95	0.00	24.59
Movement LOS		A	B		B					D		C
d_A, Approach Delay [s/veh]	9.71			11.72			0.00			36.24		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	18.33											
Intersection LOS	B											
Intersection V/C	0.860											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.52	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1400	0	400
d_b, Bicycle Delay [s]	7.23	3.62	40.01	25.61
l_b,int, Bicycle LOS Score for Intersection	2.344	2.507	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	10	224	27	147	179	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	224	27	147	179	5
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	65	8	43	52	1
Total Analysis Volume [veh/h]	12	260	31	171	208	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	616	675	798	685
Degree of Utilization, x	0.02	0.39	0.25	0.31

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	1.82	1.00	1.33
95th-Percentile Queue Length [ft]	1.49	45.42	25.07	33.35
Approach Delay [s/veh]	11.22		9.03	10.63
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.39			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	30.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	808	153	26	455	10	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	808	153	26	455	10	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	202	38	7	114	3	1
Total Analysis Volume [veh/h]	808	153	26	455	10	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.04	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	10.06	0.00	30.89	17.18
Movement LOS	A	A	B	A	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.04	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.10	1.10	6.08	6.08
d_A, Approach Delay [s/veh]	0.00		0.54		27.73	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.43					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	13.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	536	357	0	474	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	536	357	0	474	0	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	89	0	119	0	1
Total Analysis Volume [veh/h]	536	357	0	474	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	9.74	0.00	22.39	13.41
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.53	0.53
d_A, Approach Delay [s/veh]	0.00		0.00		13.41	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	58.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.969

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	127	16	251	18	53	211	6	9	180	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	127	16	251	18	53	211	6	9	180	26
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	43	5	86	6	18	72	2	3	62	9
Total Analysis Volume [veh/h]	41	188	174	22	344	25	73	289	8	12	247	36
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	416	405	399	385
Degree of Utilization, x	0.97	0.96	0.93	0.77

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	11.51	11.25	10.15	6.32
95th-Percentile Queue Length [ft]	287.73	281.34	253.71	157.91
Approach Delay [s/veh]	66.46	66.61	59.63	37.27
Approach LOS	F	F	F	E
Intersection Delay [s/veh]	58.86			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	220	101	109	251	167	97
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	101	109	251	167	97
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	32	35	80	54	31
Total Analysis Volume [veh/h]	282	129	140	322	214	124
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	635	620	582
Degree of Utilization, x	0.65	0.75	0.58

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.71	6.60	3.71
95th-Percentile Queue Length [ft]	117.74	165.08	92.70
Approach Delay [s/veh]	18.46	23.92	17.41
Approach LOS	C	C	C
Intersection Delay [s/veh]	20.25		
Intersection LOS	C		

Intersection Level Of Service Report
Intersection 292: Ravenswood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	80.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	3	858	36	13	499	1	19	0	44	10	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	858	36	13	499	1	19	0	44	10	0	27
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	252	11	4	147	0	6	0	13	3	0	8
Total Analysis Volume [veh/h]	4	1009	42	15	587	1	22	0	52	12	0	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.32	0.00	0.18	0.20	0.00	0.06
d_M, Delay for Movement [s/veh]	8.65	0.00	0.00	10.45	0.00	0.00	80.52	66.23	40.51	74.31	52.37	19.90
Movement LOS	A	A	A	B	A	A	F	F	E	F	F	C
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.03	0.03	0.03	2.42	2.42	2.42	1.03	1.03	1.03
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	0.63	0.63	0.63	60.50	60.50	60.50	25.68	25.68	25.68
d_A, Approach Delay [s/veh]	0.03			0.26			52.41			34.74		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	3.15											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.392

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	18	5	30	10	4	14	13	270	3	10	153	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	5	30	10	4	14	13	270	3	10	153	15
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	8	3	1	4	4	76	1	3	43	4
Total Analysis Volume [veh/h]	20	6	34	11	4	16	15	303	3	11	172	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	738	726	820	805
Degree of Utilization, x	0.08	0.04	0.39	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.26	0.13	1.87	0.98
95th-Percentile Queue Length [ft]	6.62	3.34	46.87	24.49
Approach Delay [s/veh]	8.31	8.18	10.19	8.95
Approach LOS	A	A	B	A
Intersection Delay [s/veh]	9.50			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.045

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	24	35	314	14	7	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	35	314	14	7	159
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	9	79	4	2	40
Total Analysis Volume [veh/h]	24	35	314	14	7	159
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	12.37	10.59	0.00	0.00	7.93	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.31	0.31	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	7.73	7.73	0.00	0.00	0.29	0.29
d_A, Approach Delay [s/veh]	11.31		0.00		0.33	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.31					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	2	3	325	1	1	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	3	325	1	1	182
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	81	0	0	46
Total Analysis Volume [veh/h]	2	3	325	1	1	182
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	761	873	846
Degree of Utilization, x	0.01	0.37	0.22

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.02	1.74	0.82
95th-Percentile Queue Length [ft]	0.50	43.59	20.50
Approach Delay [s/veh]	7.77	9.56	8.43
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.14		
Intersection LOS	A		

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_AM_2023.11.22.vistro
Report File: P:\...\CAM.pdf

Scenario 19 Cumulative (2040) AM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Right	0.802	21.7	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	SWB Left	0.702	29.0	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.749	74.0	E
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	EB Left	0.894	30.6	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.712	28.5	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NWB Left	0.618	33.3	C
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	0.012	50.3	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NWB Left	0.872	17.3	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	SB Left	0.808	24.6	C
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	SB Left	0.894	53.1	D
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	0.962	83.5	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Left	0.965	53.0	D
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.359	249.8	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	SWB Right	1.230	88.6	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.740	40.9	D
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.581	21.7	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.537	17.4	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NEB Thru	0.538	57.8	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SEB Thru	0.618	55.2	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.780	30.2	C
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	4.327	73.6	E
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	SEB Left	0.678	38.4	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.599	36.1	D
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	SWB Right	0.468	9.2	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.777	51.7	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.449	9.3	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.646	20.3	C
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.398	5.3	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.599	11.3	B
39	Santa Cruz Ave/Sand Hill Rd	Signalized	HCM 7th Edition	NWB Left	0.703	46.9	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	EB Right	1.396	137.3	F
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Left	1.121	90.4	F
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	SB Left	0.797	38.3	D
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.942	22.6	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	NWB Right	0.807	22.3	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	1.157	41.7	D
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWBL2	0.761	12.7	B

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.510	11.3	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	SWB Thru	0.004	0.0	A
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NEB Thru	0.004	0.0	A
254	Glenwood Ave and Laurel Street	All-way stop	HCM 7th Edition	NWB Thru	1.207	94.8	F
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	NEB Thru	0.915	37.9	E
292	Ravenswood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SEB Left	0.066	15.6	C
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.530	11.2	B
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	NWB Thru	0.004	0.0	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.491	10.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.802

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	867	1315	217	1166	469
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	867	1315	217	1166	469
Peak Hour Factor	1.0000	0.9550	0.9550	1.0000	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	227	344	54	305	123
Total Analysis Volume [veh/h]	0	908	1377	217	1221	491
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	60	60	0	35	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	55	55	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	53	50	33	33
g / C, Green / Cycle	0.58	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.23	0.39	0.35	0.31
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2334	1995	1268	583
d1, Uniform Delay [s]	10.12	14.22	27.98	26.19
k, delay calibration	0.50	0.50	0.04	0.31
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	1.98	2.58	9.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.69	0.96	0.84
d, Delay for Lane Group [s/veh]	10.61	16.20	30.56	35.36
Lane Group LOS	B	B	C	D
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.46	9.42	12.69	10.70
50th-Percentile Queue Length [ft/ln]	111.38	235.41	317.31	267.46
95th-Percentile Queue Length [veh/ln]	7.92	14.45	18.54	16.06
95th-Percentile Queue Length [ft/ln]	197.91	361.23	463.38	401.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.61	16.20	0.00	30.56	35.36
Movement LOS		B	B		C	D
d_A, Approach Delay [s/veh]	10.61		16.20		31.93	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	21.67					
Intersection LOS	C					
Intersection V/C	0.802					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.50	0.00	32.14
l_p,int, Pedestrian LOS Score for Intersectio	2.922	0.000	2.545
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	1119	686
d_b, Bicycle Delay [s]	8.76	8.75	19.45
l_b,int, Bicycle LOS Score for Intersection	2.309	2.696	1.560
Bicycle LOS	B	B	A

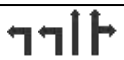
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	60	1193	2	274	1185	358	12	5	175	297	4	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	1193	2	274	1185	358	12	5	175	297	4	2
Peak Hour Factor	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	300	1	69	298	90	3	1	44	75	1	1
Total Analysis Volume [veh/h]	60	1201	2	276	1193	361	12	5	176	299	4	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			2		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	60	60	20	65	65	0	40	0	40	40	40
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	85	85	14	79	79	0	16	0	20	20	20
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	84	84	10	89	89	14	14	17	17
g / C, Green / Cycle	0.06	0.62	0.62	0.07	0.66	0.66	0.10	0.10	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.22	0.08	0.42	0.45	0.01	0.06	0.09	0.09
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1727	1806	2750	1781	1780
c, Capacity [veh/h]	104	2221	1165	257	1224	1130	186	283	223	222
d1, Uniform Delay [s]	62.03	12.30	12.30	62.56	13.89	14.56	54.88	57.99	56.59	56.59
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.74	0.45	0.85	40.25	2.58	3.32	0.16	1.65	2.77	2.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.36	0.36	1.07	0.64	0.68	0.09	0.62	0.69	0.69
d, Delay for Lane Group [s/veh]	65.77	12.74	13.14	102.82	16.48	17.88	55.04	59.64	59.36	59.37
Lane Group LOS	E	B	B	F	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.11	5.70	6.11	5.82	14.13	14.68	0.54	2.98	5.21	5.21
50th-Percentile Queue Length [ft/ln]	52.73	142.53	152.85	145.61	353.37	367.01	13.51	74.41	130.17	130.14
95th-Percentile Queue Length [veh/ln]	3.80	9.62	10.17	10.01	20.30	20.96	0.97	5.36	8.95	8.95
95th-Percentile Queue Length [ft/ln]	94.92	240.43	254.23	250.33	507.52	524.10	24.31	133.93	223.73	223.68

Movement, Approach, & Intersection Results

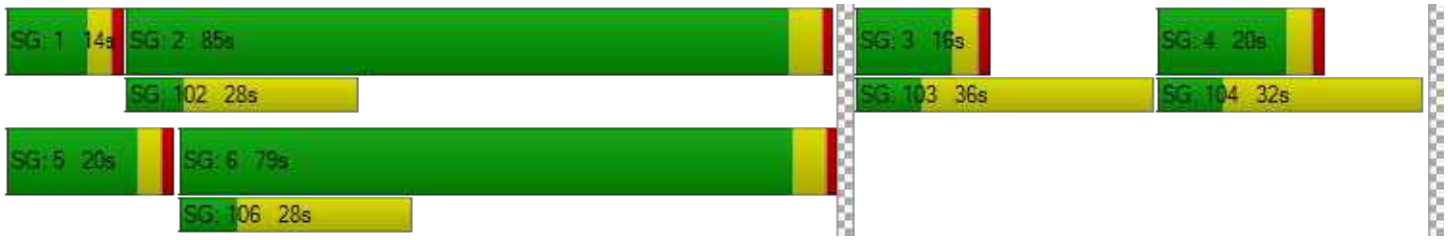
d_M, Delay for Movement [s/veh]	65.77	12.88	13.14	102.82	16.96	17.88	55.04	55.04	59.64	59.36	59.37	59.37
Movement LOS	E	B	B	F	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	15.39			30.09			59.24			59.36		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	28.97											
Intersection LOS	C											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.07	56.07	56.99	56.99
l_p,int, Pedestrian LOS Score for Intersectio	3.014	3.182	2.396	2.158
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1096	175	234
d_b, Bicycle Delay [s]	11.23	13.81	56.28	52.67
l_b,int, Bicycle LOS Score for Intersection	2.254	3.069	1.878	2.063
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	74.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	281	712	120	28	829	396	537	54	195	57	66	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	281	712	120	28	829	396	537	54	195	57	66	21
Peak Hour Factor	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	180	30	7	210	100	136	14	49	14	17	5
Total Analysis Volume [veh/h]	285	721	122	28	840	401	544	55	198	58	67	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	20	80	80	18	72	72	35	35	35	0	35	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	58	58	15	58	58	37	45	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	98	98	5	90	90	31	31	31	13	13
g / C, Green / Cycle	0.08	0.63	0.63	0.03	0.58	0.58	0.20	0.20	0.20	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.16	0.23	0.23	0.02	0.35	0.35	0.17	0.17	0.13	0.03	0.05
s, saturation flow rate [veh/h]	1781	1870	1764	1781	1870	1668	1781	1797	1555	1781	1789
c, Capacity [veh/h]	150	1175	1109	59	1080	963	358	361	312	153	154
d1, Uniform Delay [s]	71.04	13.93	13.97	73.65	21.26	21.38	59.51	59.47	56.58	66.97	68.14
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	430.86	0.89	0.95	2.17	2.51	2.88	3.88	3.78	1.58	1.14	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.90	0.37	0.37	0.47	0.60	0.61	0.84	0.83	0.63	0.38	0.57
d, Delay for Lane Group [s/veh]	501.90	14.82	14.92	75.82	23.77	24.27	63.39	63.25	58.16	68.12	70.62
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.85	7.52	7.19	1.13	15.85	14.46	11.79	11.83	7.32	2.25	3.50
50th-Percentile Queue Length [ft/ln]	596.26	187.95	179.70	28.30	396.27	361.56	294.71	295.84	183.08	56.26	87.61
95th-Percentile Queue Length [veh/ln]	37.81	12.01	11.59	2.04	22.38	20.70	17.42	17.48	11.76	4.05	6.31
95th-Percentile Queue Length [ft/ln]	945.20	300.36	289.63	50.94	559.51	517.48	435.48	436.88	294.03	101.26	157.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	501.90	14.86	14.92	75.82	23.88	24.27	63.33	63.25	58.16	68.12	70.62	70.62
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	137.92			25.15			62.04			69.62		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	73.98											
Intersection LOS	E											
Intersection V/C	0.749											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.92	66.92	66.92	66.92
l_p,int, Pedestrian LOS Score for Intersectio	2.900	2.963	2.472	2.061
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	529	423
d_b, Bicycle Delay [s]	33.36	33.32	42.08	48.20
l_b,int, Bicycle LOS Score for Intersection	2.490	2.607	2.875	1.801
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	574	72	324	741	62	193	44	1	50	49	385
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	574	72	324	741	62	193	44	1	50	49	385
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	152	19	86	196	16	51	12	0	13	13	102
Total Analysis Volume [veh/h]	0	606	76	342	782	65	204	46	1	53	52	407
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	56	34	56	22	56	34	34	34	34	0	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	32	32	19	54	54	32	32
g / C, Green / Cycle	0.35	0.35	0.21	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.19	0.20	0.19	0.23	0.23	0.47	0.29
s, saturation flow rate [veh/h]	1870	1622	1781	1870	1812	538	1762
c, Capacity [veh/h]	695	568	377	1113	1079	263	667
d1, Uniform Delay [s]	23.64	23.69	34.68	9.59	9.60	34.44	27.00
k, delay calibration	0.50	0.50	0.15	0.50	0.50	0.50	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.81	3.96	11.27	1.01	1.05	45.15	7.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.56	0.91	0.39	0.39	0.96	0.77
d, Delay for Lane Group [s/veh]	26.44	27.66	45.95	10.60	10.65	79.58	34.17
Lane Group LOS	C	C	D	B	B	E	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.48	5.84	8.22	4.22	4.13	8.91	11.00
50th-Percentile Queue Length [ft/ln]	161.90	145.99	205.44	105.62	103.36	222.74	274.93
95th-Percentile Queue Length [veh/ln]	10.65	9.80	12.92	7.60	7.44	13.80	16.44
95th-Percentile Queue Length [ft/ln]	266.24	245.06	322.97	189.90	186.05	345.12	410.90

Movement, Approach, & Intersection Results

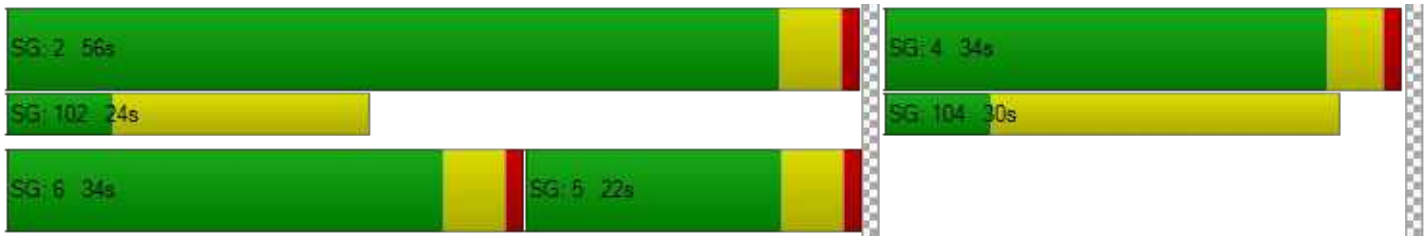
d_M, Delay for Movement [s/veh]	26.44	26.93	27.66	45.95	10.62	10.65	79.58	79.58	79.58	34.17	34.17	34.17
Movement LOS	C	C	C	D	B	B	E	E	E	C	C	C
d_A, Approach Delay [s/veh]	27.01			20.78			79.58			34.17		
Approach LOS	C			C			E			C		
d_I, Intersection Delay [s/veh]	30.60											
Intersection LOS	C											
Intersection V/C	0.894											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	28.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	20.78
l_p,int, Pedestrian LOS Score for Intersectio	2.638	3.137	1.864	2.170
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	1130	650	650
d_b, Bicycle Delay [s]	20.79	8.54	20.54	20.53
l_b,int, Bicycle LOS Score for Intersection	2.122	2.541	1.974	2.404
Bicycle LOS	B	B	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	69	488	391	490	291	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	488	391	490	291	60
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	131	105	132	78	16
Total Analysis Volume [veh/h]	74	525	420	527	313	65
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing m	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	33	44	44	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	48	48	93	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	5	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	Yes	No	No	No	Yes	
Pedestrian Recall	No	No	No	Yes	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.60
g_i, Effective Green Time [s]	35	74	37	91	50
g / C, Green / Cycle	0.27	0.57	0.28	0.70	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.33	0.24	0.28	0.21
s, saturation flow rate [veh/h]	1781	1574	1781	1870	1793
c, Capacity [veh/h]	479	860	501	1311	688
d1, Uniform Delay [s]	36.24	19.96	43.95	8.10	31.33
k, delay calibration	0.50	0.50	0.27	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	3.23	8.91	0.92	3.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.61	0.84	0.40	0.55
d, Delay for Lane Group [s/veh]	36.93	23.19	52.86	9.02	34.47
Lane Group LOS	D	C	D	A	C
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.91	11.35	13.80	5.98	9.78
50th-Percentile Queue Length [ft/ln]	47.66	283.74	345.00	149.54	244.42
95th-Percentile Queue Length [veh/ln]	3.43	16.87	19.89	9.99	14.90
95th-Percentile Queue Length [ft/ln]	85.79	421.86	497.31	249.81	372.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.93	23.19	52.86	9.02	34.47	34.47
Movement LOS	D	C	D	A	C	C
d_A, Approach Delay [s/veh]	24.88		28.46		34.47	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	28.53					
Intersection LOS	C					
Intersection V/C	0.712					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	56.33	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.310	2.658	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	1361	623
d_b, Bicycle Delay [s]	36.98	6.76	31.40
l_b,int, Bicycle LOS Score for Intersection	1.560	3.122	2.183
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	10	10	2	146	22	328	19	611	230	281	472	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	10	2	146	22	328	19	611	230	281	472	43
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	1	40	6	90	5	168	63	77	130	12
Total Analysis Volume [veh/h]	11	11	2	160	24	360	21	671	253	309	519	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing m	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	62	25	62	57	25	57	28	62	25	22	57	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	55	38	55	83	38	83	9	55	38	37	83	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	2.5	2.6	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.50	4.60	4.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.50	2.60	2.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	34	34	34	34	3	61	61	26	85	85
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.02	0.47	0.47	0.20	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.14	0.24	0.01	0.19	0.18	0.17	0.15	0.16
s, saturation flow rate [veh/h]	994	1813	1342	1521	1781	3560	1406	1781	1870	1796
c, Capacity [veh/h]	172	476	404	399	39	1671	660	360	1217	1169
d1, Uniform Delay [s]	51.19	35.58	42.49	45.67	62.90	22.56	21.77	50.07	9.36	9.38
k, delay calibration	0.10	0.10	0.10	0.28	0.11	0.50	0.50	0.25	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.02	0.77	16.59	10.98	0.72	1.69	12.78	0.46	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.03	0.46	0.90	0.54	0.40	0.38	0.86	0.24	0.24
d, Delay for Lane Group [s/veh]	51.33	35.60	43.26	62.26	73.87	23.28	23.46	62.85	9.82	9.86
Lane Group LOS	D	D	D	E	E	C	C	E	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.33	0.32	5.23	12.89	0.80	6.81	5.14	10.88	3.37	3.28
50th-Percentile Queue Length [ft/ln]	8.36	7.99	130.80	322.13	20.10	170.18	128.55	272.12	84.20	82.12
95th-Percentile Queue Length [veh/ln]	0.60	0.58	8.98	18.77	1.45	11.09	8.86	16.30	6.06	5.91
95th-Percentile Queue Length [ft/ln]	15.05	14.38	224.58	469.31	36.18	277.16	221.52	407.39	151.56	147.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.33	35.60	35.60	43.26	43.26	62.26	73.87	23.28	23.46	62.85	9.84	9.86
Movement LOS	D	D	D	D	D	E	E	C	C	E	A	A
d_A, Approach Delay [s/veh]	42.81			55.83			24.45			28.56		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	33.29											
Intersection LOS	C											
Intersection V/C	0.618											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.45	54.45	54.45	54.45
l_p,int, Pedestrian LOS Score for Intersectio	1.983	2.321	3.006	2.769
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	777	1208
d_b, Bicycle Delay [s]	35.95	36.22	24.48	10.39
l_b,int, Bicycle LOS Score for Intersection	1.599	2.457	2.339	2.281
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	50.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	1	0	5	7	0	87	15	459	6	115	560	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	5	7	0	87	15	459	6	115	560	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	2	0	24	4	128	2	32	156	3
Total Analysis Volume [veh/h]	1	0	6	8	0	97	17	510	7	128	622	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.08	0.00	0.17	0.02	0.01	0.00	0.12	0.01	0.00
d_M, Delay for Movement [s/veh]	50.32	36.55	12.78	45.48	39.14	14.37	8.86	0.00	0.00	8.91	0.00	0.00
Movement LOS	F	E	B	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.08	1.00	1.00	1.00	0.05	0.00	0.00	0.42	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.91	1.91	1.91	25.08	25.08	25.08	1.37	0.00	0.00	10.39	0.00	0.00
d_A, Approach Delay [s/veh]	18.14			16.74			0.28			1.50		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	2.26											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	1017	81	1211	3440	159	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1017	81	1211	3440	159	388
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	275	22	328	931	43	105
Total Analysis Volume [veh/h]	1101	88	1311	3723	172	420
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	113.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	60	144	84	144	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	5
Pedestrian Clearance [s]	35	13	0	13	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	31	31	46	81	11	62
g / C, Green / Cycle	0.30	0.30	0.46	0.79	0.11	0.61
(v / s)_i Volume / Saturation Flow Rate	0.22	0.06	0.38	0.73	0.05	0.10
s, saturation flow rate [veh/h]	5094	1569	3459	5094	3459	4220
c, Capacity [veh/h]	1536	473	1574	4034	385	2431
d1, Uniform Delay [s]	31.79	26.38	24.41	8.22	42.45	10.19
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	0.19	1.21	1.12	0.82	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.19	0.83	0.92	0.45	0.17
d, Delay for Lane Group [s/veh]	32.42	26.56	25.62	9.34	43.26	10.22
Lane Group LOS	C	C	C	A	D	B
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.48	1.49	12.33	9.10	2.04	1.39
50th-Percentile Queue Length [ft/ln]	186.98	37.37	308.16	227.41	51.05	34.80
95th-Percentile Queue Length [veh/ln]	11.96	2.69	18.08	14.04	3.68	2.51
95th-Percentile Queue Length [ft/ln]	299.10	67.26	452.11	351.06	91.89	62.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.42	26.56	25.62	9.34	43.26	10.22
Movement LOS	C	C	C	A	D	B
d_A, Approach Delay [s/veh]	31.99		13.58		19.82	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	17.33					
Intersection LOS	B					
Intersection V/C	0.872					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.42	0.00	42.42
l_p,int, Pedestrian LOS Score for Intersectio	3.900	0.000	2.925
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	2707	568
d_b, Bicycle Delay [s]	12.77	6.37	26.14
l_b,int, Bicycle LOS Score for Intersection	2.214	4.328	1.670
Bicycle LOS	B	E	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	114	245	401	10	20	27	60	754	248	753	2459	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	245	401	10	20	27	60	754	248	753	2459	41
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	65	107	3	5	7	16	201	66	201	655	11
Total Analysis Volume [veh/h]	122	261	428	11	21	29	64	804	264	803	2622	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing m	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	149	50	25	50	149
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	26	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	94	94	94	94	94	94	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	16	19	43	1	6	6	58	34	34	58	50	50
g / C, Green / Cycle	0.17	0.20	0.46	0.01	0.06	0.06	0.62	0.36	0.36	0.62	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.15	0.12	0.10	0.01	0.01	0.02	0.17	0.16	0.17	0.47	0.51	0.03
s, saturation flow rate [veh/h]	797	2249	4220	937	3560	1550	368	5094	1589	1703	5094	1589
c, Capacity [veh/h]	133	460	1927	13	213	92	228	1853	578	1066	2679	836
d1, Uniform Delay [s]	38.69	33.78	15.51	46.49	41.97	42.50	21.02	22.69	22.91	12.37	21.86	10.91
k, delay calibration	0.20	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	32.01	1.10	0.06	87.18	0.20	1.91	0.67	0.16	0.56	1.10	4.53	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.57	0.22	0.88	0.10	0.31	0.28	0.43	0.46	0.75	0.98	0.05
d, Delay for Lane Group [s/veh]	70.70	34.88	15.56	133.67	42.17	44.41	21.69	22.85	23.48	13.47	26.39	10.93
Lane Group LOS	E	C	B	F	D	D	C	C	C	B	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.84	2.65	1.74	0.56	0.24	0.70	0.26	4.41	4.45	4.16	18.29	0.44
50th-Percentile Queue Length [ft/ln]	96.08	66.31	43.48	14.08	6.01	17.61	6.47	110.29	111.30	104.01	457.24	10.93
95th-Percentile Queue Length [veh/ln]	6.92	4.77	3.13	1.01	0.43	1.27	0.47	7.86	7.91	7.49	25.30	0.79
95th-Percentile Queue Length [ft/ln]	172.94	119.36	78.27	25.34	10.81	31.69	11.65	196.41	197.81	187.22	632.58	19.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.70	34.88	15.56	133.67	42.17	44.41	21.69	22.85	23.48	13.47	26.39	10.93
Movement LOS	E	C	B	F	D	D	C	C	C	B	C	B
d_A, Approach Delay [s/veh]	30.07			59.73			22.93			23.20		
Approach LOS	C			E			C			C		
d_I, Intersection Delay [s/veh]	24.57											
Intersection LOS	C											
Intersection V/C	0.808											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	38.55	0.00	38.55	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.512	0.000	3.178	0.000
Crosswalk LOS	D	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	798	656	3162	1931
d_b, Bicycle Delay [s]	17.02	21.29	15.91	0.06
l_b,int, Bicycle LOS Score for Intersection	2.229	1.610	2.182	3.468
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	53.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	116	748	74	495	720	19	59	16	79	16	6	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	748	74	495	720	19	59	16	79	16	6	155
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	192	19	127	184	5	15	4	20	4	2	40
Total Analysis Volume [veh/h]	119	766	76	507	738	19	60	16	81	16	6	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing m	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	90	73	73	90	78	78	33	33	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.60	0.60	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.17	0.51	0.51	0.37	0.39	0.39	0.05	0.14	0.01	0.20
s, saturation flow rate [veh/h]	717	837	806	1361	984	971	1176	711	1283	824
c, Capacity [veh/h]	389	471	453	448	592	584	109	179	187	208
d1, Uniform Delay [s]	12.00	25.44	25.57	27.07	16.78	16.84	62.26	42.16	51.31	45.33
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.06	0.11	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.02	24.06	25.38	83.84	5.27	5.42	4.23	1.42	0.20	15.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.91	0.91	1.13	0.64	0.65	0.55	0.54	0.09	0.79
d, Delay for Lane Group [s/veh]	14.02	49.50	50.96	110.91	22.05	22.25	66.49	43.58	51.51	61.27
Lane Group LOS	B	D	D	F	C	C	E	D	D	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.30	14.06	13.83	7.65	8.00	7.98	2.13	2.81	0.40	5.93
50th-Percentile Queue Length [ft/ln]	32.58	351.50	345.66	191.30	200.02	199.48	53.37	70.14	10.12	148.36
95th-Percentile Queue Length [veh/ln]	2.35	20.21	19.92	13.25	12.64	12.61	3.84	5.05	0.73	9.93
95th-Percentile Queue Length [ft/ln]	58.64	505.23	498.12	331.29	315.99	315.30	96.07	126.25	18.21	248.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.02	50.14	50.96	110.91	22.15	22.25	66.49	43.58	43.58	51.51	61.27	61.27
Movement LOS	B	D	D	F	C	C	E	D	D	D	E	E
d_A, Approach Delay [s/veh]	45.74			57.75			52.34			60.41		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	53.10											
Intersection LOS	D											
Intersection V/C	0.894											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.29	56.29	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	2.883	3.011	2.144	2.724
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1124	1077	505	508
d_b, Bicycle Delay [s]	12.57	14.10	36.40	36.36
l_b,int, Bicycle LOS Score for Intersection	2.352	2.602	1.819	1.858
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	83.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.962

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	155	658	855	82	174	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	658	855	82	174	83
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	170	221	21	45	21
Total Analysis Volume [veh/h]	160	680	884	85	180	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing m	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	130	130	130	30	30
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	130	114	114	30	30
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	133	117	117	20	20
g / C, Green / Cycle	0.08	0.83	0.73	0.73	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.20	0.43	0.58	0.60	0.11	0.11
s, saturation flow rate [veh/h]	797	1593	837	808	1705	803
c, Capacity [veh/h]	65	1321	610	589	217	102
d1, Uniform Delay [s]	73.59	4.08	13.99	14.72	68.24	68.11
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.09
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	702.33	1.44	10.27	12.32	6.16	13.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.46	0.51	0.79	0.82	0.83	0.84
d, Delay for Lane Group [s/veh]	775.92	5.52	24.27	27.04	74.40	82.07
Lane Group LOS	F	A	C	C	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	15.32	2.78	11.76	12.55	7.61	3.85
50th-Percentile Queue Length [ft/ln]	383.10	69.60	293.94	313.78	190.15	96.16
95th-Percentile Queue Length [veh/ln]	26.03	5.01	17.38	18.36	12.13	6.92
95th-Percentile Queue Length [ft/ln]	650.65	125.28	434.53	459.04	303.22	173.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	775.92	5.52	25.52	27.04	74.40	82.07
Movement LOS	F	A	C	C	E	F
d_A, Approach Delay [s/veh]	152.26		25.65		76.88	
Approach LOS	F		C		E	
d_I, Intersection Delay [s/veh]	83.47					
Intersection LOS	F					
Intersection V/C	0.962					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.31	71.31	69.44
l_p,int, Pedestrian LOS Score for Intersectio	2.799	2.754	2.134
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1574	1374	337
d_b, Bicycle Delay [s]	3.65	7.85	55.36
l_b,int, Bicycle LOS Score for Intersection	2.253	2.359	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	53.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.965

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	757	946	94	947	514	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	757	946	94	947	514	80
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	199	249	25	249	135	21
Total Analysis Volume [veh/h]	796	995	99	996	540	84
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	135	135	21	135	30	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	115	115	15	130	30	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	112	112	11	126	27	27
g / C, Green / Cycle	0.70	0.70	0.07	0.79	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.50	0.66	0.06	0.63	0.20	0.20
s, saturation flow rate [veh/h]	1593	1516	1781	1593	1406	1730
c, Capacity [veh/h]	1117	1064	120	1255	235	290
d1, Uniform Delay [s]	14.27	19.09	73.79	9.64	66.73	66.73
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.87	15.87	5.26	5.23	118.77	114.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.94	0.82	0.79	1.19	1.19
d, Delay for Lane Group [s/veh]	18.15	34.96	79.05	14.87	185.50	181.30
Lane Group LOS	B	C	E	B	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.50	31.10	4.18	9.03	17.41	21.09
50th-Percentile Queue Length [ft/ln]	212.52	777.59	104.40	225.80	435.36	527.30
95th-Percentile Queue Length [veh/ln]	13.28	40.25	7.52	13.96	26.30	31.12
95th-Percentile Queue Length [ft/ln]	332.06	1006.25	187.91	349.02	657.45	778.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.15	34.96	79.05	14.87	183.51	181.30
Movement LOS	B	C	E	B	F	F
d_A, Approach Delay [s/veh]	27.49		20.67		183.18	
Approach LOS	C		C		F	
d_I, Intersection Delay [s/veh]	53.04					
Intersection LOS	D					
Intersection V/C	0.965					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.526
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1386	1574	335
d_b, Bicycle Delay [s]	7.59	3.64	55.54
l_b,int, Bicycle LOS Score for Intersection	3.037	2.463	2.589
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	249.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.359

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	172	1191	441	66	1323	20	22	126	379	370	132	221
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	1191	441	66	1323	20	22	126	379	370	132	221
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	323	120	18	359	5	6	34	103	100	36	60
Total Analysis Volume [veh/h]	187	1292	478	72	1435	22	24	137	411	401	143	240
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	80	80	21	80	80	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	31	31	39	59	59	10	29	29	31	50	50
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	20	20	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	8	38	38	7	37	37	3	35	35	35	66	66
g / C, Green / Cycle	0.06	0.29	0.29	0.05	0.28	0.28	0.02	0.27	0.27	0.27	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.35	0.04	0.60	0.60	0.02	0.09	0.27	0.26	0.17	0.35
s, saturation flow rate [veh/h]	1781	3560	1582	1781	1593	829	1528	1604	1538	1547	837	689
c, Capacity [veh/h]	110	1044	464	91	451	234	34	432	414	419	427	351
d1, Uniform Delay [s]	61.00	45.94	45.94	60.97	46.61	46.61	63.13	37.95	46.81	46.65	18.81	23.54
k, delay calibration	0.15	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.15	0.04	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	329.37	82.21	112.74	5.57	513.84	522.03	23.19	0.15	22.26	5.85	0.46	8.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.71	1.16	1.21	0.79	2.13	2.13	0.70	0.32	0.99	0.96	0.34	0.68
d, Delay for Lane Group [s/veh]	390.37	128.15	158.68	66.54	560.45	568.64	86.31	38.10	69.07	52.50	19.27	32.09
Lane Group LOS	F	F	F	E	F	F	F	D	E	D	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.59	28.32	29.09	2.51	39.47	41.61	1.01	3.54	15.58	6.69	2.60	6.19
50th-Percentile Queue Length [ft/ln]	339.87	708.00	727.32	62.81	986.76	1040.22	25.25	88.40	389.44	167.16	65.11	154.77
95th-Percentile Queue Length [veh/ln]	22.41	40.51	42.41	4.52	65.49	68.77	1.82	6.36	22.05	10.93	4.69	10.27
95th-Percentile Queue Length [ft/ln]	560.27	1012.77	1060.35	113.06	1637.32	1719.28	45.45	159.12	551.26	273.17	117.20	256.78

Movement, Approach, & Intersection Results

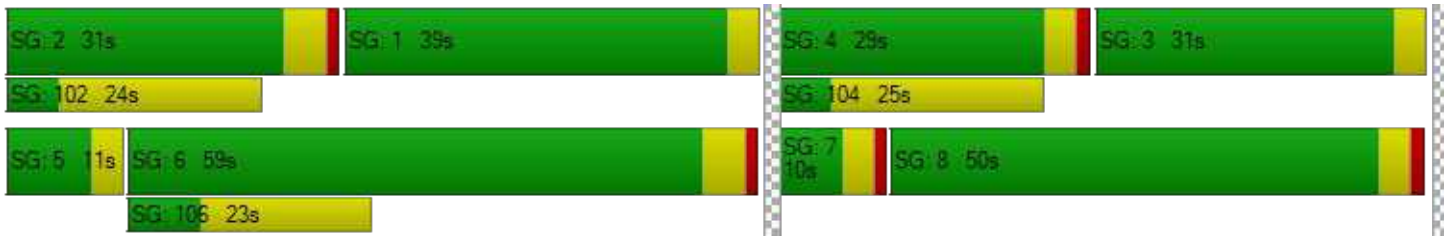
d_M, Delay for Movement [s/veh]	390.37	130.10	158.68	66.54	563.17	568.64	86.31	38.10	69.07	52.50	19.27	32.09
Movement LOS	F	F	F	E	F	F	F	D	E	D	B	C
d_A, Approach Delay [s/veh]	161.95			539.86			62.37			40.19		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	249.81											
Intersection LOS	F											
Intersection V/C	1.359											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	46.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	27.14	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.394	2.942	2.374	2.606
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	831	385	708
d_b, Bicycle Delay [s]	41.64	22.23	42.51	27.33
l_b,int, Bicycle LOS Score for Intersection	2.636	2.401	2.503	2.853
Bicycle LOS	B	B	B	C

Sequence

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	88.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.230

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	105	1210	641	651	393	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	1210	641	651	393	56
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	319	169	172	104	15
Total Analysis Volume [veh/h]	111	1276	676	687	415	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		2		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	12	60	48	48	20	20
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	9	49	36	36	36	36
g / C, Green / Cycle	0.10	0.52	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.08	0.49	0.24	0.56	0.44	0.04
s, saturation flow rate [veh/h]	1312	2623	2792	1227	937	1569
c, Capacity [veh/h]	129	1356	1065	468	356	597
d1, Uniform Delay [s]	41.89	21.44	23.84	28.81	29.26	18.83
k, delay calibration	0.04	0.21	0.15	0.50	0.50	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.13	7.01	0.90	222.00	100.39	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.94	0.63	1.47	1.16	0.10
d, Delay for Lane Group [s/veh]	48.02	28.44	24.74	250.81	129.65	18.86
Lane Group LOS	D	C	C	F	F	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.74	13.49	5.99	38.67	17.63	0.82
50th-Percentile Queue Length [ft/ln]	68.46	337.18	149.78	966.63	440.74	20.60
95th-Percentile Queue Length [veh/ln]	4.93	19.51	10.01	60.41	26.94	1.48
95th-Percentile Queue Length [ft/ln]	123.24	487.75	250.14	1510.23	673.58	37.08

Movement, Approach, & Intersection Results

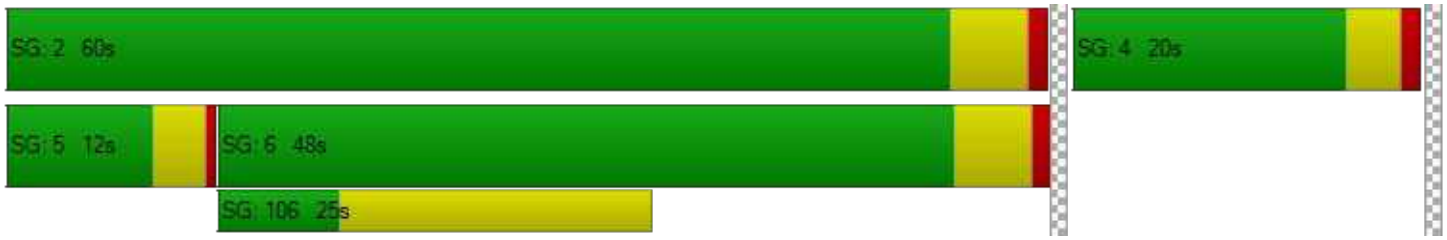
d_M, Delay for Movement [s/veh]	48.02	28.44	24.74	250.81	129.65	18.86
Movement LOS	D	C	C	F	F	B
d_A, Approach Delay [s/veh]	30.01		138.69		115.86	
Approach LOS	C		F		F	
d_I, Intersection Delay [s/veh]	88.58					
Intersection LOS	F					
Intersection V/C	1.230					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	36.88
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.356
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1154	900	334
d_b, Bicycle Delay [s]	8.51	14.32	32.78
l_b,int, Bicycle LOS Score for Intersection	2.704	2.684	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	19	703	6	36	445	46	41	10	16	73	6	344
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	703	6	36	445	46	41	10	16	73	6	344
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	182	2	9	115	12	11	3	4	19	2	89
Total Analysis Volume [veh/h]	20	727	6	37	460	48	42	10	17	75	6	356
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	33	33	3	35	8	8	8	30	30
g / C, Green / Cycle	0.02	0.36	0.36	0.04	0.38	0.09	0.09	0.09	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.04	0.34	0.02	0.02	0.01	0.08	0.30
s, saturation flow rate [veh/h]	937	1422	1864	937	1514	937	1376	1356	937	1188
c, Capacity [veh/h]	16	512	671	36	576	82	121	119	301	382
d1, Uniform Delay [s]	45.70	24.54	24.54	44.75	26.89	39.62	39.61	39.14	23.30	30.83
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	172.42	2.61	2.00	81.24	9.23	1.64	1.10	0.55	0.43	30.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.22	0.62	0.62	1.04	0.88	0.26	0.26	0.14	0.25	0.95
d, Delay for Lane Group [s/veh]	218.12	27.15	26.55	125.99	36.12	41.26	40.71	39.68	23.73	61.06
Lane Group LOS	F	C	C	F	D	D	D	D	C	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.17	6.02	7.79	1.62	11.67	0.51	0.72	0.39	1.25	10.93
50th-Percentile Queue Length [ft/ln]	29.18	150.54	194.68	40.54	291.66	12.63	17.88	9.71	31.15	273.36
95th-Percentile Queue Length [veh/ln]	2.10	10.05	12.36	2.92	17.27	0.91	1.29	0.70	2.24	16.36
95th-Percentile Queue Length [ft/ln]	52.52	251.15	309.09	72.97	431.70	22.73	32.19	17.47	56.08	408.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	218.12	26.81	26.55	125.99	36.12	36.12	41.00	40.71	39.68	23.73	61.06	61.06
Movement LOS	F	C	C	F	D	D	D	D	D	C	E	E
d_A, Approach Delay [s/veh]	31.89			42.23			40.63			54.65		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	40.86											
Intersection LOS	D											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.07	36.07	36.07	36.07
l_p,int, Pedestrian LOS Score for Intersectio	2.397	2.680	2.144	2.074
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	431	431	646	646
d_b, Bicycle Delay [s]	28.61	28.63	21.27	21.27
l_b,int, Bicycle LOS Score for Intersection	2.181	2.459	1.673	2.281
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	34	557	4	5	335	184	252	3	46	3	7	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	557	4	5	335	184	252	3	46	3	7	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	147	1	1	88	48	66	1	12	1	2	1
Total Analysis Volume [veh/h]	36	586	4	5	353	194	265	3	48	3	7	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing m	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			59			13			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	94	94	94	94	94	94	36	36	36	0	36	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	90	90	90	90	32	32
g / C, Green / Cycle	0.69	0.69	0.69	0.69	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.04	0.32	0.01	0.32	0.23	0.01
s, saturation flow rate [veh/h]	860	1867	826	1721	1364	1777
c, Capacity [veh/h]	518	1297	501	1196	381	464
d1, Uniform Delay [s]	14.48	8.85	13.89	8.87	48.15	37.59
k, delay calibration	0.50	0.50	0.50	0.50	0.41	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	1.15	0.04	1.26	15.54	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.45	0.01	0.46	0.83	0.03
d, Delay for Lane Group [s/veh]	14.74	10.00	13.93	10.14	63.69	37.62
Lane Group LOS	B	B	B	B	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	7.64	0.07	6.96	11.68	0.35
50th-Percentile Queue Length [ft/ln]	14.12	191.10	1.86	173.96	292.12	8.79
95th-Percentile Queue Length [veh/ln]	1.02	12.18	0.13	11.28	17.29	0.63
95th-Percentile Queue Length [ft/ln]	25.42	304.46	3.35	282.11	432.27	15.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.74	10.00	10.00	13.93	10.14	10.14	63.69	63.69	63.69	37.62	37.62	37.62
Movement LOS	B	B	B	B	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	10.27			10.17			63.69			37.62		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	21.68											
Intersection LOS	C											
Intersection V/C	0.581											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.43	54.43	54.43	54.43
l_p,int, Pedestrian LOS Score for Intersectio	2.241	2.792	2.053	1.750
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1384	1384	491	491
d_b, Bicycle Delay [s]	6.19	6.35	37.22	37.11
l_b,int, Bicycle LOS Score for Intersection	2.593	2.470	2.081	1.583
Bicycle LOS	B	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	4	423	158	35	350	1	49	98	12	147	112	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	423	158	35	350	1	49	98	12	147	112	114
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	113	42	9	93	0	13	26	3	39	30	30
Total Analysis Volume [veh/h]	4	452	169	37	374	1	52	105	13	157	120	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing m	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			32			7			13		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	64	64	64	64	64	64	26	26	26	0	26	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	62	62	62	62	20	20	20	20
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.35	0.05	0.20	0.05	0.06	0.13	0.14
s, saturation flow rate [veh/h]	1006	1764	803	1869	1133	1820	1250	1685
c, Capacity [veh/h]	662	1208	471	1280	170	408	271	378
d1, Uniform Delay [s]	8.03	6.91	12.45	5.60	40.03	29.00	36.98	31.66
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.57	0.33	0.58	1.01	0.39	1.95	1.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.51	0.08	0.29	0.31	0.29	0.58	0.64
d, Delay for Lane Group [s/veh]	8.04	8.48	12.77	6.19	41.03	29.38	38.93	33.47
Lane Group LOS	A	A	B	A	D	C	D	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	5.53	0.44	2.66	1.16	2.16	3.48	4.92
50th-Percentile Queue Length [ft/ln]	0.87	138.32	10.94	66.46	28.96	53.95	86.90	123.12
95th-Percentile Queue Length [veh/ln]	0.06	9.39	0.79	4.78	2.09	3.88	6.26	8.56
95th-Percentile Queue Length [ft/ln]	1.56	234.76	19.69	119.62	52.13	97.11	156.43	214.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.04	8.48	8.48	12.77	6.19	6.19	41.03	29.38	29.38	38.93	33.47	33.47
Movement LOS	A	A	A	B	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	8.48			6.78			32.95			35.62		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	17.38											
Intersection LOS	B											
Intersection V/C	0.537											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.71	34.71	34.71	34.71
l_p,int, Pedestrian LOS Score for Intersectio	2.480	2.415	2.025	2.185
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1330	1330	486	486
d_b, Bicycle Delay [s]	5.12	5.13	25.89	25.97
l_b,int, Bicycle LOS Score for Intersection	2.591	2.239	1.840	2.218
Bicycle LOS	B	B	A	B

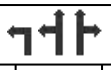
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	57.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.538

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	35	271	127	356	170	110	163	362	144	264	258	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	35	271	127	356	170	110	163	362	144	264	258	24
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	71	33	93	44	29	42	94	38	69	67	6
Total Analysis Volume [veh/h]	36	282	132	371	177	115	170	377	150	275	269	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10			2			10			2		
v_di, Inbound Pedestrian Volume crossing m	10			2			10			2		
v_co, Outbound Pedestrian Volume crossing	5			3			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			3			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	17			17			6			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	67	67	67	19	19	19	19	20	20	20
g / C, Green / Cycle	0.17	0.17	0.17	0.45	0.45	0.45	0.12	0.12	0.12	0.12	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.09	0.15	0.15	0.07	0.10	0.10	0.10	0.10	0.10	0.10	0.11
s, saturation flow rate [veh/h]	1781	1870	1483	1781	1837	1557	1781	1870	1870	1529	1781	1828	1806
c, Capacity [veh/h]	306	321	255	794	819	694	222	233	233	191	240	247	244
d1, Uniform Delay [s]	52.46	60.53	56.06	27.14	27.12	24.81	63.46	63.84	63.84	63.39	62.65	62.62	62.71
k, delay calibration	0.11	0.29	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	17.57	1.63	1.17	1.12	0.51	5.42	6.68	6.68	6.99	5.38	5.16	5.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.88	0.52	0.34	0.34	0.17	0.77	0.81	0.81	0.79	0.78	0.77	0.78
d, Delay for Lane Group [s/veh]	52.63	78.10	57.69	28.30	28.24	25.33	68.89	70.52	70.52	70.37	68.03	67.78	68.19
Lane Group LOS	D	E	E	C	C	C	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.18	12.06	4.66	6.78	6.95	2.63	6.64	7.47	7.47	5.93	7.28	7.42	7.45
50th-Percentile Queue Length [ft/ln]	29.39	301.53	116.60	169.38	173.67	65.87	166.0	186.7	186.7	148.2	182.00	185.55	186.24
95th-Percentile Queue Length [veh/ln]	2.12	17.76	8.21	11.04	11.27	4.74	10.87	11.95	11.95	9.92	11.70	11.89	11.93
95th-Percentile Queue Length [ft/ln]	52.90	443.91	205.15	276.10	281.73	118.56	271.7	298.7	298.7	248.0	292.62	297.25	298.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.63	78.10	57.69	28.29	28.24	25.33	68.89	70.52	70.37	67.95	68.04	68.19
Movement LOS	D	E	E	C	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	70.08			27.76			70.09			68.00		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	57.79											
Intersection LOS	E											
Intersection V/C	0.538											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersectio	2.355	2.709	4.300	2.538
Crosswalk LOS	B	B	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.43	39.69	50.30	44.75
l_b,int, Bicycle LOS Score for Intersection	2.302	2.654	2.960	2.029
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	55.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	70	49	20	424	41	172	187	12	81	244	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	70	49	20	424	41	172	187	12	81	244	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	19	14	6	118	11	48	52	3	23	68	15
Total Analysis Volume [veh/h]	23	78	54	22	471	46	191	208	13	90	271	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			19			18			18		
v_di, Inbound Pedestrian Volume crossing m	18			18			19			18		
v_co, Outbound Pedestrian Volume crossing	25			20			26			21		
v_ci, Inbound Pedestrian Volume crossing mi	26			21			25			20		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	52			17			11			37		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	4	4	5	5	5	4	4	4	4	4	4
Maximum Green [s]	20	71	71	20	71	71	30	26	30	26	30	26
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	44	44	10	44	44	28	28	28	28	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.70	0.00	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	79	71	79	71	26	26	30	30
g / C, Green / Cycle	0.53	0.48	0.53	0.48	0.17	0.17	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.08	0.02	0.28	0.11	0.12	0.05	0.19
s, saturation flow rate [veh/h]	951	1652	1296	1826	1781	1830	1781	1737
c, Capacity [veh/h]	390	788	699	870	311	319	359	350
d1, Uniform Delay [s]	20.07	22.15	16.87	28.48	56.87	57.75	50.05	58.75
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.46	0.02	2.98	8.79	11.70	1.67	36.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.17	0.03	0.59	0.61	0.69	0.25	0.95
d, Delay for Lane Group [s/veh]	20.36	22.60	16.88	31.47	65.66	69.44	51.73	95.61
Lane Group LOS	C	C	B	C	E	E	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	2.79	0.37	14.25	7.45	8.90	3.05	16.05
50th-Percentile Queue Length [ft/ln]	10.44	69.73	9.33	356.36	186.20	222.40	76.16	401.26
95th-Percentile Queue Length [veh/ln]	0.75	5.02	0.67	20.45	11.92	13.79	5.48	22.62
95th-Percentile Queue Length [ft/ln]	18.80	125.52	16.79	511.15	298.09	344.69	137.09	565.52

Movement, Approach, & Intersection Results

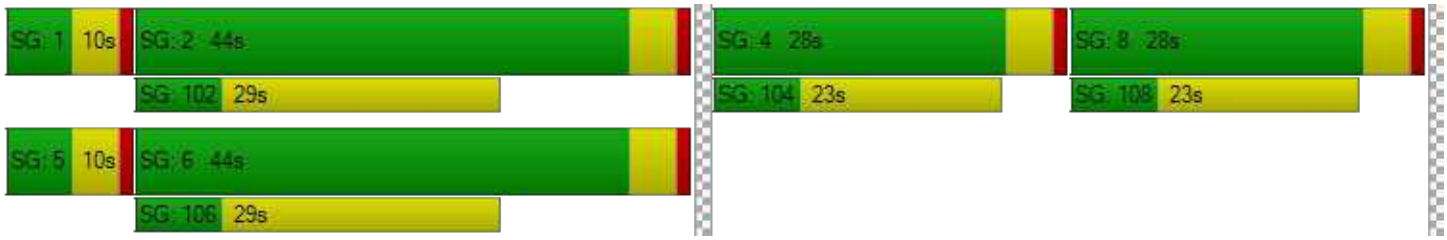
d_M, Delay for Movement [s/veh]	20.36	22.60	22.60	16.88	31.47	31.47	65.66	69.44	69.44	51.73	95.61	95.61
Movement LOS	C	C	C	B	C	C	E	E	E	D	F	F
d_A, Approach Delay [s/veh]	22.27			30.87			67.69			86.25		
Approach LOS	C			C			E			F		
d_I, Intersection Delay [s/veh]	55.22											
Intersection LOS	E											
Intersection V/C	0.618											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.88	63.88	63.88	63.88
l_p,int, Pedestrian LOS Score for Intersectio	2.250	2.198	2.226	2.170
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	528	313	313
d_b, Bicycle Delay [s]	41.43	40.70	53.28	53.99
l_b,int, Bicycle LOS Score for Intersection	1.815	2.449	2.239	2.256
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.780

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	50	281	83	11	336	72	111	181	7	94	199	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	281	83	11	336	72	111	181	7	94	199	49
Peak Hour Factor	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	84	25	3	100	21	33	54	2	28	59	15
Total Analysis Volume [veh/h]	60	335	99	13	400	86	132	216	8	112	237	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	13			32			14			33		
v_di, Inbound Pedestrian Volume crossing m	14			33			13			32		
v_co, Outbound Pedestrian Volume crossing	12			26			25			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			25			26			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			39			21			32		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	76	76	76	76
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	27	27	17	19
g / C, Green / Cycle	0.35	0.35	0.23	0.26
(v / s)_i Volume / Saturation Flow Rate	0.32	0.28	0.19	0.23
s, saturation flow rate [veh/h]	1555	1771	1829	1800
c, Capacity [veh/h]	604	676	415	460
d1, Uniform Delay [s]	22.75	22.12	28.17	27.18
k, delay calibration	0.30	0.24	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.45	3.46	5.23	5.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.74	0.86	0.88
d, Delay for Lane Group [s/veh]	30.20	25.58	33.40	33.00
Lane Group LOS	C	C	C	C
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	9.12	8.27	6.62	7.46
50th-Percentile Queue Length [ft/ln]	227.99	206.74	165.40	186.57
95th-Percentile Queue Length [veh/ln]	14.07	12.99	10.83	11.94
95th-Percentile Queue Length [ft/ln]	351.80	324.65	270.86	298.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.20	30.20	30.20	25.58	25.58	25.58	33.40	33.40	33.40	33.00	33.00	33.00
Movement LOS	C	C	C	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	30.20			25.58			33.40			33.00		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	30.18											
Intersection LOS	C											
Intersection V/C	0.780											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.66	29.39	27.66	27.66
l_p,int, Pedestrian LOS Score for Intersectio	2.146	2.095	2.010	2.166
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	792	792	792	792
d_b, Bicycle Delay [s]	14.00	14.08	13.95	14.03
l_b,int, Bicycle LOS Score for Intersection	2.375	2.383	2.147	2.231
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	73.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.327

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	4	16	8	118	10	367	19	953	126	328	1357	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	8	118	10	367	19	953	126	328	1357	26
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	31	3	96	5	249	33	86	355	7
Total Analysis Volume [veh/h]	4	17	8	123	10	384	20	997	132	343	1419	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	40	0	0	40	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	40	0	0	40	0	15	85	0	25	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	34	34	34	34	6	78	78	22	94	94
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.04	0.52	0.52	0.15	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	3.74	0.25	0.01	0.28	0.08	0.19	0.27	0.27
s, saturation flow rate [veh/h]	465	1589	36	1564	1781	3560	1555	1781	3560	1849
c, Capacity [veh/h]	134	361	54	355	67	1850	808	261	2239	1163
d1, Uniform Delay [s]	47.52	45.04	73.66	57.69	69.29	14.22	11.72	60.30	5.31	5.31
k, delay calibration	0.11	0.11	0.50	0.37	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.02	704.43	65.23	2.44	1.13	0.43	165.13	0.59	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.02	2.45	1.08	0.30	0.54	0.16	1.31	0.42	0.43
d, Delay for Lane Group [s/veh]	48.06	45.07	778.10	122.92	71.73	15.35	12.15	225.42	5.90	6.45
Lane Group LOS	D	D	F	F	E	B	B	F	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.66	0.24	12.73	19.82	0.79	7.40	1.62	21.63	3.13	3.43
50th-Percentile Queue Length [ft/ln]	16.43	6.09	318.17	495.59	19.70	185.02	40.56	540.73	78.21	85.86
95th-Percentile Queue Length [veh/ln]	1.18	0.44	22.91	28.37	1.42	11.86	2.92	32.86	5.63	6.18
95th-Percentile Queue Length [ft/ln]	29.58	10.97	572.71	709.29	35.46	296.55	73.01	821.48	140.78	154.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.06	48.06	45.07	778.10	778.10	122.92	71.73	15.35	12.15	225.42	6.08	6.45
Movement LOS	D	D	D	F	F	F	E	B	B	F	A	A
d_A, Approach Delay [s/veh]	47.23			291.47			15.96			48.14		
Approach LOS	D			F			B			D		
d_I, Intersection Delay [s/veh]	73.63											
Intersection LOS	E											
Intersection V/C	4.327											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.39	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.978	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1040	1174
d_b, Bicycle Delay [s]	44.84	44.93	17.29	12.83
l_b,int, Bicycle LOS Score for Intersection	1.607	2.413	2.508	2.544
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.678

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	334	184	78	68	303	35	110	840	43	75	878	246
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	184	78	68	303	35	110	840	43	75	878	246
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	49	21	18	81	9	30	226	12	20	236	66
Total Analysis Volume [veh/h]	359	198	84	73	326	38	118	903	46	81	944	265
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			2			5			3		
v_di, Inbound Pedestrian Volume crossing m	5			3			5			2		
v_co, Outbound Pedestrian Volume crossing	2			6			6			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			6			6			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	18			15			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	32	0	0	32	0	15	71	0	15	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	28	28	28	29	29	29	12	69	69	8	66	66
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.19	0.08	0.46	0.46	0.06	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.06	0.04	0.17	0.02	0.07	0.25	0.03	0.05	0.27	0.17
s, saturation flow rate [veh/h]	1781	1842	1513	1781	1870	1531	1781	3560	1532	1781	3560	1539
c, Capacity [veh/h]	337	348	286	338	355	291	137	1648	709	101	1579	682
d1, Uniform Delay [s]	58.30	58.26	52.07	51.32	59.61	50.42	66.56	19.63	15.75	68.55	22.21	19.76
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.78	4.56	0.56	0.32	10.10	0.20	14.51	1.31	0.18	13.75	1.68	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.81	0.29	0.22	0.92	0.13	0.86	0.55	0.06	0.80	0.60	0.39
d, Delay for Lane Group [s/veh]	63.08	62.82	52.64	51.63	69.71	50.62	81.07	20.94	15.92	82.30	23.89	21.42
Lane Group LOS	E	E	D	D	E	D	F	C	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.46	10.76	2.78	2.40	13.27	1.23	4.89	8.36	0.68	3.41	10.01	4.83
50th-Percentile Queue Length [ft/ln]	261.51	268.97	69.61	59.92	331.87	30.67	122.19	209.06	17.01	85.30	250.29	120.64
95th-Percentile Queue Length [veh/ln]	15.76	16.14	5.01	4.31	19.25	2.21	8.51	13.11	1.22	6.14	15.20	8.43
95th-Percentile Queue Length [ft/ln]	394.11	403.45	125.29	107.85	481.25	55.21	212.84	327.63	30.62	153.53	380.02	210.71

Movement, Approach, & Intersection Results

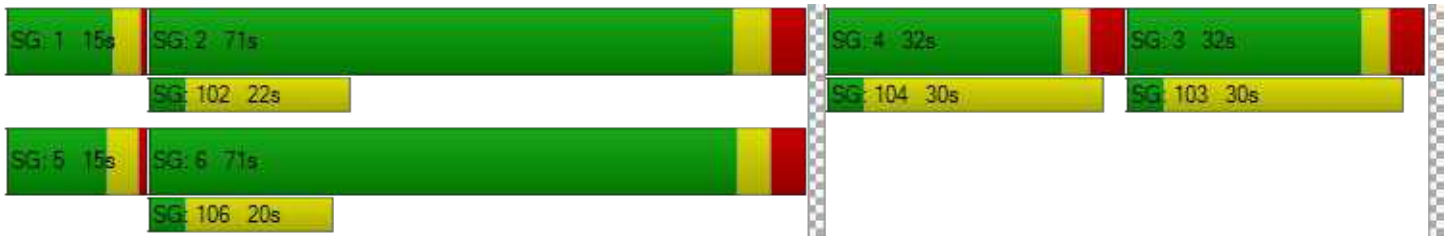
d_M, Delay for Movement [s/veh]	63.02	62.82	52.64	51.63	69.71	50.62	81.07	20.94	15.92	82.30	23.89	21.42
Movement LOS	E	E	D	D	E	D	F	C	B	F	C	C
d_A, Approach Delay [s/veh]	61.60			65.03			27.38			27.05		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	38.43											
Intersection LOS	D											
Intersection V/C	0.678											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	67.22	67.22
l_p,int, Pedestrian LOS Score for Intersectio	2.486	2.312	2.890	2.900
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	340	851	845
d_b, Bicycle Delay [s]	52.15	52.07	24.83	25.12
l_b,int, Bicycle LOS Score for Intersection	2.617	2.281	2.440	2.624
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	97	285	59	94	352	57	108	850	148	110	760	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	285	59	94	352	57	108	850	148	110	760	98
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	77	16	25	95	15	29	228	40	30	204	26
Total Analysis Volume [veh/h]	104	306	63	101	378	61	116	914	159	118	817	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	19			38			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	130.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	28	35	0	28	35	0	12	67	0	20	75	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	40	40	10	35	35	8	71	71	12	74	74
g / C, Green / Cycle	0.10	0.27	0.27	0.07	0.23	0.23	0.05	0.47	0.47	0.08	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.04	0.06	0.20	0.04	0.07	0.26	0.10	0.07	0.23	0.07
s, saturation flow rate [veh/h]	1781	1870	1545	1781	1870	1513	1781	3560	1589	1781	3560	1543
c, Capacity [veh/h]	186	498	411	125	434	351	97	1672	746	141	1761	763
d1, Uniform Delay [s]	63.97	48.39	42.14	68.83	55.57	46.10	68.34	10.26	9.09	66.21	15.81	13.56
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	1.24	0.17	11.33	8.33	0.23	109.38	1.29	0.65	11.92	0.88	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.61	0.15	0.81	0.87	0.17	1.20	0.55	0.21	0.83	0.46	0.14
d, Delay for Lane Group [s/veh]	66.56	49.63	42.31	80.17	63.89	46.34	177.72	11.55	9.74	78.13	16.69	13.94
Lane Group LOS	E	D	D	F	E	D	F	B	A	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.96	10.39	1.85	4.26	14.92	1.89	6.53	4.32	1.44	4.82	6.30	1.43
50th-Percentile Queue Length [ft/ln]	99.09	259.64	46.27	106.60	373.09	47.17	163.30	107.96	35.99	120.54	157.55	35.63
95th-Percentile Queue Length [veh/ln]	7.13	15.67	3.33	7.65	21.26	3.40	11.28	7.73	2.59	8.42	10.42	2.57
95th-Percentile Queue Length [ft/ln]	178.37	391.77	83.29	191.26	531.48	84.90	281.89	193.16	64.79	210.57	260.48	64.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.56	49.63	42.31	80.17	63.89	46.34	177.72	11.55	9.74	78.13	16.69	13.94
Movement LOS	E	D	D	F	E	D	F	B	A	E	B	B
d_A, Approach Delay [s/veh]	52.38			64.95			27.52			23.38		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	36.06											
Intersection LOS	D											
Intersection V/C	0.599											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.28	67.28	67.28	67.28
l_p,int, Pedestrian LOS Score for Intersectio	2.375	2.385	2.832	2.823
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	365	791	898
d_b, Bicycle Delay [s]	50.65	51.14	27.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.340	2.451	2.541	2.418
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	25	14	143	57	26	45	0	987	77	0	944	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	14	143	57	26	45	0	987	77	0	944	65
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	1.0000	0.9130	0.9130	1.0000	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	39	16	7	12	0	270	21	0	258	18
Total Analysis Volume [veh/h]	27	15	157	62	28	49	0	1081	84	0	1034	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			8			7			0		
v_di, Inbound Pedestrian Volume crossing m	0			7			8			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			36			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	143.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	37	0	0	37	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	20	20	20	13	13	104	104	104	104
g / C, Green / Cycle	0.13	0.13	0.13	0.09	0.09	0.69	0.69	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.10	0.03	0.05	0.30	0.05	0.29	0.05
s, saturation flow rate [veh/h]	1781	1870	1533	1781	1560	3560	1539	3560	1554
c, Capacity [veh/h]	235	247	202	156	136	2466	1066	2466	1077
d1, Uniform Delay [s]	57.43	57.02	62.76	64.75	65.74	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.10	6.30	1.64	3.63	0.57	0.14	0.53	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.06	0.78	0.40	0.56	0.44	0.08	0.42	0.07
d, Delay for Lane Group [s/veh]	57.64	57.12	69.06	66.39	69.37	0.57	0.14	0.53	0.12
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.93	0.51	6.16	2.34	3.00	0.19	0.04	0.18	0.04
50th-Percentile Queue Length [ft/ln]	23.18	12.77	153.92	58.62	75.11	4.87	1.07	4.50	0.88
95th-Percentile Queue Length [veh/ln]	1.67	0.92	10.23	4.22	5.41	0.35	0.08	0.32	0.06
95th-Percentile Queue Length [ft/ln]	41.73	22.98	255.65	105.51	135.20	8.76	1.92	8.10	1.59

Movement, Approach, & Intersection Results

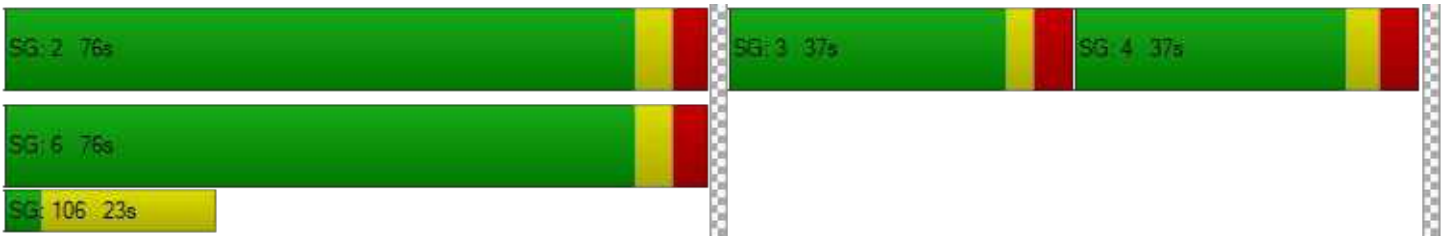
d_M, Delay for Movement [s/veh]	57.64	57.12	69.06	66.39	69.37	69.37	0.00	0.57	0.14	0.00	0.53	0.12
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	66.61			68.04			0.54			0.50		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	9.16											
Intersection LOS	A											
Intersection V/C	0.468											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.031	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	392	912	912
d_b, Bicycle Delay [s]	48.36	49.39	22.23	22.26
l_b,int, Bicycle LOS Score for Intersection	1.888	1.789	2.521	2.471
Bicycle LOS	A	A	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	51.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	395	69	317	256	31	176	1025	233	28	1023	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	395	69	317	256	31	176	1025	233	28	1023	18
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	111	19	89	72	9	50	289	66	8	288	5
Total Analysis Volume [veh/h]	72	445	78	357	288	35	198	1154	262	32	1152	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			10			0			10		
v_di, Inbound Pedestrian Volume crossing m	0			10			0			10		
v_co, Outbound Pedestrian Volume crossing	12			0			0			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			0			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	41			11			1			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		No			Yes		No	Yes		No	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	60	60	24	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.40	0.40	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.10	0.15	0.02	0.11	0.32	0.17	0.02	0.32	0.01
s, saturation flow rate [veh/h]	1848	1747	3459	1870	1503	1781	3560	1570	1781	3560	1512
c, Capacity [veh/h]	296	280	665	360	289	202	1425	628	285	1591	676
d1, Uniform Delay [s]	63.01	63.01	54.56	57.83	50.03	63.51	30.30	24.44	46.95	14.03	10.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	57.67	67.03	3.08	16.89	0.86	58.40	5.08	2.04	0.80	2.90	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	1.05	0.54	0.80	0.12	0.98	0.81	0.42	0.11	0.72	0.03
d, Delay for Lane Group [s/veh]	120.68	130.04	57.64	74.72	50.88	121.91	35.39	26.47	47.75	16.93	10.74
Lane Group LOS	F	F	E	E	D	F	D	C	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.05	15.90	6.41	12.16	1.17	10.54	16.56	5.50	0.97	7.49	0.20
50th-Percentile Queue Length [ft/ln]	401.19	397.55	160.16	303.93	29.23	263.39	414.07	137.41	24.21	187.30	5.02
95th-Percentile Queue Length [veh/ln]	22.86	22.98	10.56	17.88	2.10	15.86	23.24	9.34	1.74	11.98	0.36
95th-Percentile Queue Length [ft/ln]	571.38	574.55	263.93	446.88	52.62	396.47	580.93	233.53	43.57	299.53	9.04

Movement, Approach, & Intersection Results

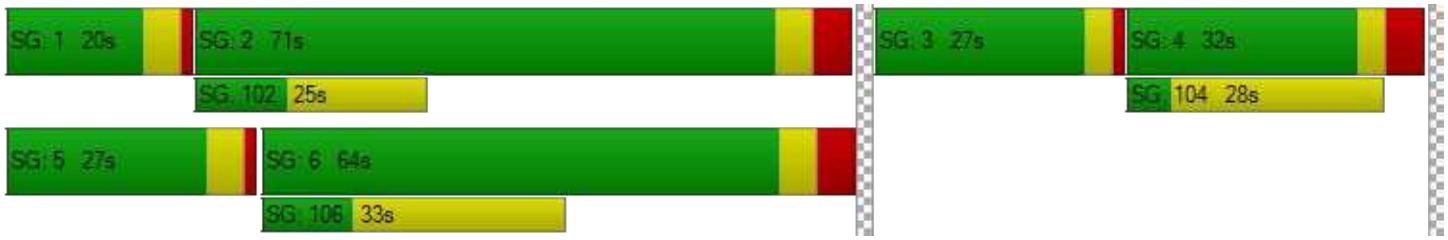
d_M, Delay for Movement [s/veh]	120.68	125.21	130.04	57.64	74.72	50.88	121.91	35.39	26.47	47.75	16.93	10.74
Movement LOS	F	F	F	E	E	D	F	D	C	D	B	B
d_A, Approach Delay [s/veh]	125.29			64.53			44.55			17.65		
Approach LOS	F			E			D			B		
d_I, Intersection Delay [s/veh]	51.69											
Intersection LOS	D											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.321	2.706	0.000	2.946
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.90	52.38	29.54	25.35
l_b,int, Bicycle LOS Score for Intersection	2.050	2.682	2.891	2.553
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.449

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	23	64	6	7	65	40	1136	20	89	1383	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	23	64	6	7	65	40	1136	20	89	1383	35
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9500	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	6	17	2	2	17	11	304	5	24	370	9
Total Analysis Volume [veh/h]	69	25	69	6	7	70	43	1216	21	95	1481	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	6			4			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			4			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			0			3			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	40	40	40	40	40	40	24	86	86	24	86	86
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	22	22	22	8	108	108	10	110	110
g / C, Green / Cycle	0.15	0.15	0.15	0.06	0.72	0.72	0.07	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.04	0.02	0.23	0.23	0.05	0.28	0.28
s, saturation flow rate [veh/h]	1436	1338	1583	1781	3560	1851	1781	3560	1842
c, Capacity [veh/h]	244	231	232	99	2567	1334	116	2601	1346
d1, Uniform Delay [s]	61.87	55.04	57.17	67.17	0.85	0.85	67.59	0.54	0.54
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	0.10	0.73	2.97	0.32	0.63	12.86	0.43	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.06	0.30	0.43	0.32	0.32	0.82	0.38	0.39
d, Delay for Lane Group [s/veh]	65.00	55.14	57.90	70.14	1.17	1.47	80.45	0.98	1.38
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.27	0.44	2.49	1.65	0.61	0.75	3.92	0.56	0.73
50th-Percentile Queue Length [ft/ln]	156.76	11.08	62.22	41.16	15.36	18.79	98.09	13.95	18.25
95th-Percentile Queue Length [veh/ln]	10.38	0.80	4.48	2.96	1.11	1.35	7.06	1.00	1.31
95th-Percentile Queue Length [ft/ln]	259.43	19.94	112.00	74.09	27.66	33.82	176.57	25.12	32.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.00	65.00	65.00	55.14	55.14	57.90	70.14	1.27	1.47	80.45	1.11	1.38
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	65.00			57.47			3.59			5.79		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	9.33											
Intersection LOS	A											
Intersection V/C	0.449											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	64.41
l_p,int, Pedestrian LOS Score for Intersectio	1.842	2.003	0.000	3.199
Crosswalk LOS	A	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1052	1052
d_b, Bicycle Delay [s]	45.22	44.86	16.88	16.89
l_b,int, Bicycle LOS Score for Intersection	1.829	1.697	2.264	2.447
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	166	2	244	0	2	0	285	1008	4	2	1268	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	2	244	0	2	0	285	1008	4	2	1268	98
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	1	64	0	1	0	75	265	1	1	333	26
Total Analysis Volume [veh/h]	175	2	257	0	2	0	300	1060	4	2	1333	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			0			3			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	10	0	0	10	0	4	10	0	4	15	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	40	40	0	0	40	0	35	75	0	35	75	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	30	30	30	30	27	110	110	0	83	83
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.18	0.73	0.73	0.00	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.17	0.00	0.00	0.17	0.20	0.20	0.00	0.27	0.27
s, saturation flow rate [veh/h]	1415	1563	1120	1870	1781	3560	1866	1781	3560	1792
c, Capacity [veh/h]	311	310	79	371	322	2603	1364	6	1971	992
d1, Uniform Delay [s]	56.78	57.82	0.00	48.29	56.02	0.52	0.52	74.52	10.91	10.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	5.92	0.00	0.01	11.83	0.25	0.48	28.33	0.85	1.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.84	0.00	0.01	0.93	0.27	0.27	0.33	0.48	0.49
d, Delay for Lane Group [s/veh]	58.38	63.73	0.00	48.30	67.86	0.77	1.00	102.85	11.76	12.64
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.34	9.99	0.00	0.06	11.81	0.36	0.46	0.12	5.36	5.67
50th-Percentile Queue Length [ft/ln]	158.53	249.74	0.00	1.54	295.23	8.92	11.53	3.12	134.07	141.71
95th-Percentile Queue Length [veh/ln]	10.47	15.17	0.00	0.11	17.45	0.64	0.83	0.22	9.16	9.57
95th-Percentile Queue Length [ft/ln]	261.77	379.32	0.00	2.78	436.13	16.05	20.75	5.62	229.02	239.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.38	63.73	63.73	0.00	48.30	48.30	67.86	0.85	1.00	102.85	12.01	12.64
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	61.57			48.30			15.59			12.18		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	20.26											
Intersection LOS	C											
Intersection V/C	0.646											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.970	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	905	905
d_b, Bicycle Delay [s]	44.98	44.87	22.51	22.53
l_b,int, Bicycle LOS Score for Intersection	2.276	1.563	2.310	2.351
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	18	1	38	3	0	3	97	1310	3	27	1466	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	6.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	1	38	3	0	3	97	1310	3	27	1466	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	10	1	0	1	26	345	1	7	386	6
Total Analysis Volume [veh/h]	19	1	40	3	0	3	102	1379	3	28	1543	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			5			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	35	0	0	35	0	15	105	0	15	105	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	10	122	122	3	114	114
g / C, Green / Cycle	0.09	0.09	0.09	0.07	0.81	0.81	0.02	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.00	0.06	0.25	0.25	0.02	0.29	0.29
s, saturation flow rate [veh/h]	1514	1589	1362	1781	3560	1868	1781	3560	1855
c, Capacity [veh/h]	182	142	157	123	2885	1513	37	2712	1413
d1, Uniform Delay [s]	62.97	63.84	62.46	67.24	0.00	0.00	72.60	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	1.08	0.10	13.12	0.29	0.54	27.36	0.40	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.28	0.04	0.83	0.31	0.31	0.76	0.38	0.38
d, Delay for Lane Group [s/veh]	63.24	64.92	62.56	80.36	0.29	0.54	99.96	0.40	0.78
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.73	1.49	0.22	4.21	0.11	0.23	1.34	0.15	0.31
50th-Percentile Queue Length [ft/ln]	18.20	37.28	5.49	105.22	2.86	5.72	33.59	3.81	7.63
95th-Percentile Queue Length [veh/ln]	1.31	2.68	0.40	7.57	0.21	0.41	2.42	0.27	0.55
95th-Percentile Queue Length [ft/ln]	32.76	67.10	9.88	189.33	5.15	10.29	60.47	6.86	13.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.24	63.24	64.92	62.56	62.56	62.56	80.36	0.37	0.54	99.96	0.53	0.78
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.36			62.56			5.87			2.28		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.28											
Intersection LOS	A											
Intersection V/C	0.398											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.016	1.750	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	373	373	1307	1307
d_b, Bicycle Delay [s]	49.62	49.62	9.04	9.04
l_b,int, Bicycle LOS Score for Intersection	1.659	1.570	2.376	2.436
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	378	426	77	286	219	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.93	1.92	2.00	1.94	1.90	1.74
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	426	77	286	219	256
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	114	21	77	59	69
Total Analysis Volume [veh/h]	405	456	82	306	234	274
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		12	
v_di, Inbound Pedestrian Volume crossing m	0		0		11	
v_co, Outbound Pedestrian Volume crossing	11		11		10	
v_ci, Inbound Pedestrian Volume crossing mi	12		10		11	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		91		16	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	13	13	2	19	10	10
g / C, Green / Cycle	0.35	0.35	0.06	0.52	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.22	0.30	0.05	0.16	0.13	0.19
s, saturation flow rate [veh/h]	1871	1515	1781	1871	1782	1463
c, Capacity [veh/h]	655	530	110	976	462	379
d1, Uniform Delay [s]	10.08	11.08	17.24	5.11	11.82	12.40
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	1.63	3.65	0.07	0.32	0.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.86	0.74	0.31	0.51	0.72
d, Delay for Lane Group [s/veh]	10.44	12.71	20.89	5.18	12.14	13.39
Lane Group LOS	B	B	C	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.17	2.85	0.72	0.86	1.39	1.76
50th-Percentile Queue Length [ft/ln]	54.31	71.18	17.96	21.47	34.82	44.11
95th-Percentile Queue Length [veh/ln]	3.91	5.12	1.29	1.55	2.51	3.18
95th-Percentile Queue Length [ft/ln]	97.75	128.12	32.32	38.65	62.67	79.39

Movement, Approach, & Intersection Results

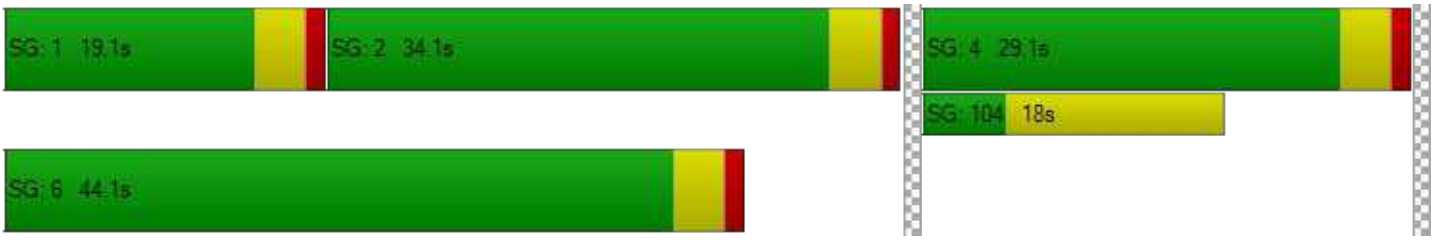
d_M, Delay for Movement [s/veh]	10.44	12.71	20.89	5.18	12.14	13.39
Movement LOS	B	B	C	A	B	B
d_A, Approach Delay [s/veh]	11.64		8.50		12.81	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.29					
Intersection LOS	B					
Intersection V/C	0.599					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	10.72	1.73
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.182	2.103
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1610	2146	1342
d_b, Bicycle Delay [s]	0.71	0.10	2.04
l_b,int, Bicycle LOS Score for Intersection	2.980	2.200	1.560
Bicycle LOS	C	B	A

Sequence

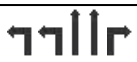
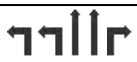
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Santa Cruz Ave/Sand Hill Rd

Control Type:	Signalized	Delay (sec / veh):	46.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.703

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	276	958	195	253	546	53	156	735	371	178	540	202
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	276	958	195	253	546	53	156	735	371	178	540	202
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	245	50	65	140	14	40	188	95	46	138	52
Total Analysis Volume [veh/h]	283	982	200	259	559	54	160	753	380	182	553	207
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			3			1		
v_di, Inbound Pedestrian Volume crossing m	1			3			4			2		
v_co, Outbound Pedestrian Volume crossing	2			3			3			4		
v_ci, Inbound Pedestrian Volume crossing mi	3			4			2			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	33			33			29			49		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.6	4.3	4.3	3.6	4.3	4.3	3.6	4.1	4.1	3.6	4.1	4.1
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	19	47	47	20	48	48	13	53	53	20	60	60
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	4.3	4.3	2.6	4.3	4.3	2.6	4.1	4.1	2.6	4.1	4.1
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	6.30	6.30	4.60	6.30	6.30	4.60	6.10	6.10	4.60	6.10	6.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	4.30	4.30	2.60	4.30	4.30	2.60	4.10	4.10	2.60	4.10	4.10
g_i, Effective Green Time [s]	13	58	58	13	57	57	8	38	38	10	39	39
g / C, Green / Cycle	0.10	0.42	0.42	0.09	0.41	0.41	0.06	0.27	0.27	0.07	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.08	0.28	0.13	0.07	0.16	0.04	0.05	0.21	0.25	0.05	0.16	0.14
s, saturation flow rate [veh/h]	3459	3560	1537	3459	3560	1534	3459	3560	1521	3459	3560	1504
c, Capacity [veh/h]	334	1479	639	314	1458	628	210	959	409	243	993	419
d1, Uniform Delay [s]	62.30	33.07	27.40	62.64	28.99	25.30	64.85	47.48	49.20	63.95	43.15	41.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	2.37	1.28	5.44	0.77	0.27	5.63	1.46	18.03	4.55	0.49	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.66	0.31	0.82	0.38	0.09	0.76	0.79	0.93	0.75	0.56	0.49
d, Delay for Lane Group [s/veh]	68.19	35.44	28.68	68.07	29.75	25.56	70.48	48.94	67.22	68.50	43.65	42.81
Lane Group LOS	E	D	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.21	13.79	4.71	4.76	6.73	1.16	2.97	12.28	14.69	3.33	8.23	6.04
50th-Percentile Queue Length [ft/ln]	130.37	344.63	117.87	118.94	168.36	28.91	74.28	307.10	367.35	83.30	205.81	151.02
95th-Percentile Queue Length [veh/ln]	8.96	19.87	8.28	8.33	10.99	2.08	5.35	18.03	20.98	6.00	12.94	10.07
95th-Percentile Queue Length [ft/ln]	223.99	496.86	206.90	208.36	274.76	52.03	133.70	450.79	524.51	149.94	323.44	251.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.19	35.44	28.68	68.07	29.75	25.56	70.48	48.94	67.22	68.50	43.65	42.81
Movement LOS	E	D	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	40.84			40.87			56.98			48.26		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	46.94											
Intersection LOS	D											
Intersection V/C	0.703											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.48	59.48	59.48	59.48
l_p,int, Pedestrian LOS Score for Intersectio	3.004	3.090	2.990	2.945
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	595	670	769
d_b, Bicycle Delay [s]	35.86	35.14	31.46	27.19
l_b,int, Bicycle LOS Score for Intersection	2.768	2.279	2.626	2.337
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	137.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.396

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	263	15	206	0	7	33	5	0	10	282	308
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	263	15	206	0	7	33	5	0	10	282	308
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	73	4	57	0	2	9	1	0	3	78	86
Total Analysis Volume [veh/h]	0	292	17	229	0	8	37	6	0	11	313	342
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	538	378	666
Degree of Utilization, x	1.11	0.13	1.40

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	17.96	0.46	31.52
95th-Percentile Queue Length [ft]	449.03	11.57	788.08
Approach Delay [s/veh]	101.36	14.00	212.09
Approach LOS	F	B	F
Intersection Delay [s/veh]	137.31		
Intersection LOS	F		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	243	215	3	0	5	68	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	215	3	0	5	68	3	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	60	1	0	1	19	1	0
Total Analysis Volume [veh/h]	270	239	3	0	6	76	3	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	512	377
Degree of Utilization, x	1.13	0.23

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	18.03	0.85
95th-Percentile Queue Length [ft]	450.85	21.35
Approach Delay [s/veh]	110.35	15.32
Approach LOS	F	C
Intersection Delay [s/veh]	137.31	
Intersection LOS	F	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	90.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.121

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	131	340	157	51	469	58	349	100	101	64	58	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	340	157	51	469	58	349	100	101	64	58	93
Peak Hour Factor	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	100	46	15	137	17	102	29	30	19	17	27
Total Analysis Volume [veh/h]	154	399	184	60	550	68	409	117	118	75	68	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	27			0			0			27		
v_di, Inbound Pedestrian Volume crossing m	27			0			0			27		
v_co, Outbound Pedestrian Volume crossing	6			0			6			0		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			6			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	26			2			7			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	32	39	29	30	30	30
g / C, Green / Cycle	0.50	0.41	0.50	0.37	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.15	0.34	0.06	0.34	0.67	0.07	0.11
s, saturation flow rate [veh/h]	1015	1734	953	1829	957	1145	1585
c, Capacity [veh/h]	385	712	364	671	443	93	609
d1, Uniform Delay [s]	15.73	20.43	13.90	23.63	29.96	16.49	16.65
k, delay calibration	0.23	0.39	0.11	0.39	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	8.11	0.21	16.67	216.15	15.27	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.82	0.16	0.92	1.45	0.81	0.29
d, Delay for Lane Group [s/veh]	17.17	28.54	14.11	40.30	246.12	31.77	16.92
Lane Group LOS	B	C	B	D	F	C	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.46	10.08	0.50	13.01	35.03	1.28	2.17
50th-Percentile Queue Length [ft/ln]	36.38	252.11	12.52	325.17	875.75	32.10	54.21
95th-Percentile Queue Length [veh/ln]	2.62	15.29	0.90	18.92	55.03	2.31	3.90
95th-Percentile Queue Length [ft/ln]	65.49	382.31	22.54	473.04	1375.70	57.78	97.58

Movement, Approach, & Intersection Results

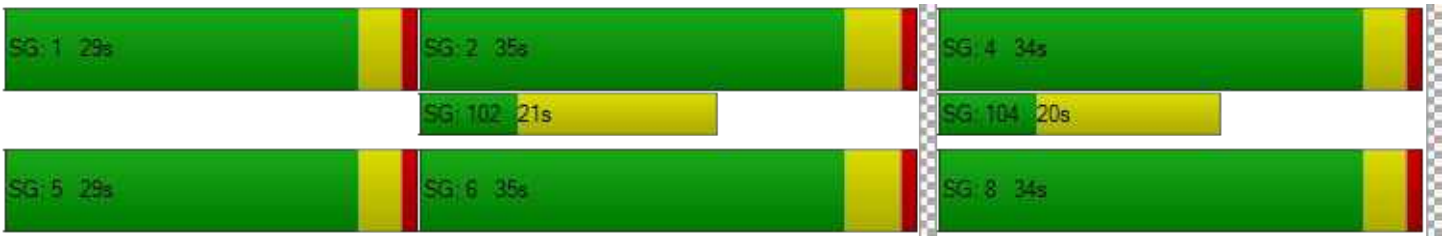
d_M, Delay for Movement [s/veh]	17.17	28.54	28.54	14.11	40.30	40.30	246.12	246.12	246.12	31.77	16.92	16.92
Movement LOS	B	C	C	B	D	D	F	F	F	C	B	B
d_A, Approach Delay [s/veh]	26.16			37.98			246.12			21.34		
Approach LOS	C			D			F			C		
d_I, Intersection Delay [s/veh]	90.40											
Intersection LOS	F											
Intersection V/C	1.121											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.75	0.00	28.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.198	0.000	2.132	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	770	770	770	770
d_b, Bicycle Delay [s]	14.94	14.76	14.80	14.76
l_b,int, Bicycle LOS Score for Intersection	2.776	2.678	2.622	1.975
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		35.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	485	532	65	421	902	555
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	485	532	65	421	902	555
Peak Hour Factor	0.9660	0.9660	0.9660	0.9660	0.9660	0.9660
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	138	17	109	233	144
Total Analysis Volume [veh/h]	502	551	67	436	934	575
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	43		21		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	5	5	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	55	25	55	60	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	33	33	33	21	58	73	73
g / C, Green / Cycle	0.23	0.23	0.23	0.15	0.41	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.19	0.04	0.28	0.26	0.37
s, saturation flow rate [veh/h]	1781	1828	1870	1781	1575	3560	1560
c, Capacity [veh/h]	416	427	437	267	649	1850	811
d1, Uniform Delay [s]	50.90	50.90	50.90	52.55	33.27	21.90	25.31
k, delay calibration	0.12	0.11	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.40	4.28	4.19	0.49	5.47	0.99	5.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.82	0.82	0.25	0.67	0.50	0.71
d, Delay for Lane Group [s/veh]	55.30	55.18	55.08	53.04	38.74	22.89	30.52
Lane Group LOS	E	E	E	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.72	12.02	12.28	2.12	12.85	9.96	14.99
50th-Percentile Queue Length [ft/ln]	293.08	300.50	306.98	53.04	321.14	249.02	374.69
95th-Percentile Queue Length [veh/ln]	17.34	17.71	18.03	3.82	18.72	15.14	21.34
95th-Percentile Queue Length [ft/ln]	433.46	442.64	450.65	95.47	468.08	378.42	533.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.26	55.12	53.04	38.74	22.89	30.52
Movement LOS	E	E	D	D	C	C
d_A, Approach Delay [s/veh]	55.19		40.64		25.80	
Approach LOS	E		D		C	
d_I, Intersection Delay [s/veh]	38.33					
Intersection LOS	D					
Intersection V/C	0.797					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	299	787
d_b, Bicycle Delay [s]	29.29	51.19	25.93
l_b,int, Bicycle LOS Score for Intersection	2.428	1.560	2.805
Bicycle LOS	B	A	C

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.942

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Base Volume Input [veh/h]	1777	0	0	911	734	952
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1777	0	0	911	734	952
Peak Hour Factor	0.9640	1.0000	1.0000	0.9640	0.9640	0.9640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	461	0	0	236	190	247
Total Analysis Volume [veh/h]	1843	0	0	945	761	988
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	60	0	0	60	60	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	51	51	34	34
g / C, Green / Cycle	0.57	0.57	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.52	0.27	0.22	0.35
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2021	2021	1323	1076
d1, Uniform Delay [s]	17.47	11.47	22.04	26.49
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.72	0.78	0.15	1.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.47	0.58	0.92
d, Delay for Lane Group [s/veh]	25.20	12.25	22.18	27.94
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	17.30	5.32	6.16	9.79
50th-Percentile Queue Length [ft/ln]	432.60	132.88	154.10	244.84
95th-Percentile Queue Length [veh/ln]	24.13	9.10	10.24	14.93
95th-Percentile Queue Length [ft/ln]	603.15	227.41	255.89	373.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.20	0.00	0.00	12.25	22.18	27.94
Movement LOS	C			B	C	C
d_A, Approach Delay [s/veh]	25.20		12.25		25.43	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.59					
Intersection LOS	C					
Intersection V/C	0.942					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.49	34.71
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.053	2.557
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	564	1239
d_b, Bicycle Delay [s]	23.25	23.22	6.52
l_b,int, Bicycle LOS Score for Intersection	3.080	2.339	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	211	23	204	145	13	18	211	409	21	190	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	211	23	204	145	13	18	211	409	21	190	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	56	6	54	38	3	5	56	108	6	50	3
Total Analysis Volume [veh/h]	12	223	24	216	153	14	19	223	432	22	201	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	413	442	424	454	482	535	449
Degree of Utilization, x	0.03	0.56	0.51	0.37	0.50	0.81	0.52

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.09	3.34	2.81	1.66	2.77	7.82	2.97
95th-Percentile Queue Length [ft]	2.24	83.51	70.32	41.62	69.32	195.41	74.14
Approach Delay [s/veh]	20.25		17.71		26.66		19.49
Approach LOS	C		C		D		C
Intersection Delay [s/veh]	22.29						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	41.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.157

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1034	590	0	1065	550	0	0	0	922	0	283
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1034	590	0	1065	550	0	0	0	922	0	283
Peak Hour Factor	1.0000	0.9190	0.9190	1.0000	0.9190	0.9190	1.0000	1.0000	1.0000	0.9190	1.0000	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	281	161	0	290	150	0	0	0	251	0	77
Total Analysis Volume [veh/h]	0	1125	642	0	1159	598	0	0	0	1003	0	308
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	23	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	53	53	53		19	19
g / C, Green / Cycle	0.66	0.66	0.66		0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.22	0.23	0.64		0.29	0.11
s, saturation flow rate [veh/h]	5094	5094	941		3459	2813
c, Capacity [veh/h]	3370	3370	623		824	671
d1, Uniform Delay [s]	5.87	5.92	12.55		30.43	26.02
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.27	0.28	27.56		100.13	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.34	0.96		1.22	0.46
d, Delay for Lane Group [s/veh]	6.14	6.20	40.11		130.55	26.52
Lane Group LOS	A	A	D		F	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.31	2.40	12.35		19.06	2.47
50th-Percentile Queue Length [ft/ln]	57.70	59.97	308.67		476.52	61.84
95th-Percentile Queue Length [veh/ln]	4.15	4.32	18.11		29.04	4.45
95th-Percentile Queue Length [ft/ln]	103.86	107.94	452.74		726.04	111.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.14	0.00	0.00	6.20	40.11	0.00	0.00	0.00	130.55	0.00	26.52
Movement LOS		A			A	D				F		C
d_A, Approach Delay [s/veh]	4.03			17.75			0.00			106.11		
Approach LOS	A			B			A			F		
d_I, Intersection Delay [s/veh]	41.69											
Intersection LOS	D											
Intersection V/C	1.157											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	31.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.951	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1326	1326	0	475
d_b, Bicycle Delay [s]	4.56	4.54	39.97	23.23
l_b,int, Bicycle LOS Score for Intersection	2.178	2.526	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Base Volume Input [veh/h]	0	1429	486	0	1436	534	0	0	0	190	0	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1429	486	0	1436	534	0	0	0	190	0	606
Peak Hour Factor	1.0000	0.9580	0.9580	1.0000	0.9580	0.9580	1.0000	1.0000	1.0000	0.9580	1.0000	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	373	127	0	375	139	0	0	0	50	0	158
Total Analysis Volume [veh/h]	0	1492	507	0	1499	557	0	0	0	198	0	633
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	50	0	0	58	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	50	0	0	50	0	0	0	0	20	0	10
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	46	46	56		16	26
g / C, Green / Cycle	0.58	0.58	0.70		0.20	0.32
(v / s)_i Volume / Saturation Flow Rate	0.29	0.32	0.53		0.06	0.22
s, saturation flow rate [veh/h]	5094	1589	2828		3459	2813
c, Capacity [veh/h]	2936	916	1980		692	911
d1, Uniform Delay [s]	10.16	10.55	7.66		27.17	23.62
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.63	2.41	2.76		0.23	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.55	0.76		0.29	0.70
d, Delay for Lane Group [s/veh]	10.79	12.95	10.43		27.39	24.59
Lane Group LOS	B	B	B		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.78	5.49	4.53		1.59	5.08
50th-Percentile Queue Length [ft/ln]	119.39	137.14	113.24		39.65	126.97
95th-Percentile Queue Length [veh/ln]	8.36	9.33	8.02		2.86	8.77
95th-Percentile Queue Length [ft/ln]	208.99	233.16	200.50		71.38	219.37

Movement, Approach, & Intersection Results

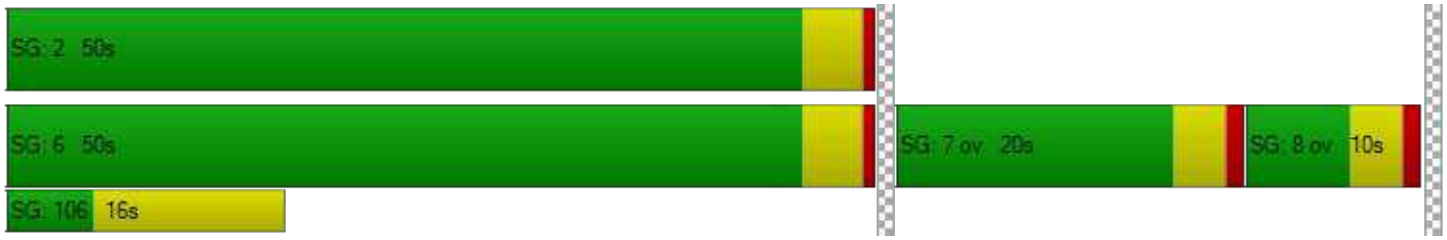
d_M, Delay for Movement [s/veh]	0.00	10.79	12.95	0.00	10.43	0.00	0.00	0.00	0.00	27.39	0.00	24.59
Movement LOS		B	B		B					C		C
d_A, Approach Delay [s/veh]	11.34			7.69			0.00			25.26		
Approach LOS	B			A			A			C		
d_I, Intersection Delay [s/veh]	12.75											
Intersection LOS	B											
Intersection V/C	0.761											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.52	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1400	0	400
d_b, Bicycle Delay [s]	7.23	3.62	40.01	25.61
l_b,int, Bicycle LOS Score for Intersection	2.659	2.384	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.510

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	10	303	36	158	134	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	303	36	158	134	5
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	88	10	46	39	1
Total Analysis Volume [veh/h]	12	352	42	184	156	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	630	690	801	654
Degree of Utilization, x	0.02	0.51	0.28	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	2.92	1.16	0.97
95th-Percentile Queue Length [ft]	1.46	73.03	29.05	24.33
Approach Delay [s/veh]	13.07		9.26	10.31
Approach LOS	B		A	B
Intersection Delay [s/veh]	11.33			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	170	0	0	387	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	0	0	387	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	0	0	97	0	0
Total Analysis Volume [veh/h]	170	0	0	387	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.56	0.00	12.33	9.12
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.72	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	442	0	0	368	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	442	0	0	368	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	0	0	92	0	0
Total Analysis Volume [veh/h]	442	0	0	368	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.22	0.00	15.30	10.85
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		13.08	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	94.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.207

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	119	16	295	19	47	304	6	9	150	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	119	16	295	19	47	304	6	9	150	57
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	41	5	101	7	16	104	2	3	51	20
Total Analysis Volume [veh/h]	41	188	163	22	404	26	64	416	8	12	205	78
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	411	452	488	387
Degree of Utilization, x	0.95	1.11	1.21	0.76

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	10.99	16.20	19.74	6.27
95th-Percentile Queue Length [ft]	274.77	404.97	493.50	156.66
Approach Delay [s/veh]	63.50	108.60	142.25	36.85
Approach LOS	F	F	F	E
Intersection Delay [s/veh]	94.82			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	37.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.915

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	232	179	109	233	220	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	179	109	233	220	131
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	57	35	75	71	42
Total Analysis Volume [veh/h]	297	229	140	299	282	168
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	575	536	539
Degree of Utilization, x	0.92	0.82	0.83

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	11.32	8.12	8.56
95th-Percentile Queue Length [ft]	283.08	202.91	213.89
Approach Delay [s/veh]	44.43	33.22	34.81
Approach LOS	E	D	D
Intersection Delay [s/veh]	37.89		
Intersection LOS	E		

Intersection Level Of Service Report
Intersection 292: Ravenswood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	15.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	3	81	25	7	429	1	4	0	4	21	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	81	25	7	429	1	4	0	4	21	0	33
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	24	7	2	126	0	1	0	1	6	0	10
Total Analysis Volume [veh/h]	4	95	29	8	505	1	5	0	5	25	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.07	0.00	0.07
d_M, Delay for Movement [s/veh]	8.41	0.00	0.00	7.47	0.00	0.00	15.51	14.40	8.96	15.63	15.60	12.52
Movement LOS	A	A	A	A	A	A	C	B	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.06	0.06	0.46	0.46	0.46
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	0.33	0.33	0.33	1.51	1.51	1.51	11.55	11.55	11.55
d_A, Approach Delay [s/veh]	0.26			0.12			12.23			13.74		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.53											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.530

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	18	5	52	10	4	14	13	356	3	10	210	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	5	52	10	4	14	13	356	3	10	210	15
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	15	3	1	4	4	100	1	3	59	4
Total Analysis Volume [veh/h]	20	6	58	11	4	16	15	400	3	11	236	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	694	665	789	767
Degree of Utilization, x	0.12	0.05	0.53	0.34

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.41	0.15	3.16	1.54
95th-Percentile Queue Length [ft]	10.27	3.66	79.08	38.44
Approach Delay [s/veh]	8.90	8.68	12.58	10.14
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	11.23			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	435	0	0	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	435	0	0	260
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	109	0	0	65
Total Analysis Volume [veh/h]	0	0	435	0	0	260
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.82	10.80	0.00	0.00	8.20	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.31		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	424	0	0	237
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	424	0	0	237
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	106	0	0	59
Total Analysis Volume [veh/h]	0	0	424	0	0	237
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	675	864	830
Degree of Utilization, x	0.00	0.49	0.29

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	2.76	1.18
95th-Percentile Queue Length [ft]	0.00	68.89	29.51
Approach Delay [s/veh]	0.00	11.12	9.06
Approach LOS	A	B	A
Intersection Delay [s/veh]	10.38		
Intersection LOS	B		

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_AM_2023.11.22.vistro
Report File: P:\...\CPAM.pdf

Scenario 20 Cumulative (2040) Plus Project AM

11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Right	0.805	23.2	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	SWB Left	0.720	29.0	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.768	75.7	E
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	EB Left	0.916	31.3	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.819	31.9	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NWB Left	0.726	402.7	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	1.315	548.8	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NWB Left	0.883	17.7	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	SB Left	0.807	25.2	C
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	SB Left	0.905	59.7	E
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.004	83.8	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Left	0.971	55.3	E
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.431	326.7	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	SWB Right	1.321	110.9	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	WB Right	0.961	87.2	F
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.790	22.6	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.591	16.7	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NEB Thru	0.748	59.0	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SEB Thru	0.661	53.1	D
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NEB Thru	0.843	41.0	D
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	4.332	76.5	E
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	NWB Left	0.727	39.4	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.612	36.0	D
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	SWB Right	0.497	8.7	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.799	56.9	E
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.460	8.9	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.654	19.3	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.406	5.0	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.614	11.5	B
39	Santa Cruz Ave/Sand Hill Rd	Signalized	HCM 7th Edition	NWB Left	0.728	47.5	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	EB Right	1.426	166.7	F
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Left	1.125	91.1	F
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	SB Left	0.799	38.4	D
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.944	22.7	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	NWB Right	0.856	24.3	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	1.157	38.6	D
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWBL2	0.815	14.2	B

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.522	11.7	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.041	20.2	C
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Right	0.007	12.9	B
254	Glenwood Ave and Laurel Street	All-way stop	HCM 7th Edition	NWB Thru	1.290	116.9	F
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	NEB Thru	0.970	46.0	E
292	Ravenswood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SEB Left	0.174	34.6	D
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.556	11.8	B
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SWB Left	0.061	15.2	C
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.513	10.7	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	890	1324	217	1166	513
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	890	1324	217	1166	513
Peak Hour Factor	1.0000	0.9550	0.9550	1.0000	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	233	347	54	305	134
Total Analysis Volume [veh/h]	0	932	1386	217	1221	537
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	60	60	0	35	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	55	55	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	53	50	33	33
g / C, Green / Cycle	0.58	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.23	0.39	0.35	0.34
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2334	1995	1268	583
d1, Uniform Delay [s]	10.20	14.28	27.98	27.34
k, delay calibration	0.50	0.50	0.04	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.51	2.02	2.58	18.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.69	0.96	0.92
d, Delay for Lane Group [s/veh]	10.71	16.30	30.56	45.61
Lane Group LOS	B	B	C	D
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.61	9.52	12.69	13.48
50th-Percentile Queue Length [ft/ln]	115.25	238.07	317.31	336.89
95th-Percentile Queue Length [veh/ln]	8.13	14.58	18.54	19.50
95th-Percentile Queue Length [ft/ln]	203.28	364.60	463.38	487.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.71	16.30	0.00	30.56	45.61
Movement LOS		B	B		C	D
d_A, Approach Delay [s/veh]	10.71		16.30		35.16	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	23.15					
Intersection LOS	C					
Intersection V/C	0.805					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.50	0.00	32.14
l_p,int, Pedestrian LOS Score for Intersectio	2.945	0.000	2.556
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	1119	686
d_b, Bicycle Delay [s]	8.76	8.75	19.45
l_b,int, Bicycle LOS Score for Intersection	2.329	2.703	1.560
Bicycle LOS	B	B	A

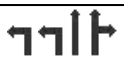
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	60	1216	2	274	1237	358	12	5	175	297	4	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	1216	2	274	1237	358	12	5	175	297	4	2
Peak Hour Factor	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	306	1	69	311	90	3	1	44	75	1	1
Total Analysis Volume [veh/h]	60	1225	2	276	1246	361	12	5	176	299	4	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			2		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	60	60	20	65	65	0	40	0	40	40	40
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	85	85	14	79	79	0	16	0	20	20	20
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	84	84	10	89	89	14	14	17	17
g / C, Green / Cycle	0.06	0.62	0.62	0.07	0.66	0.66	0.10	0.10	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.08	0.43	0.46	0.01	0.06	0.09	0.09
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1732	1806	2750	1781	1780
c, Capacity [veh/h]	104	2221	1165	257	1224	1134	186	283	223	222
d1, Uniform Delay [s]	62.03	12.37	12.37	62.56	14.20	14.99	54.88	57.99	56.59	56.59
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.74	0.46	0.88	40.25	2.80	3.70	0.16	1.65	2.77	2.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.36	0.36	1.07	0.66	0.71	0.09	0.62	0.69	0.69
d, Delay for Lane Group [s/veh]	65.77	12.83	13.24	102.82	17.00	18.68	55.04	59.64	59.36	59.37
Lane Group LOS	E	B	B	F	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.11	5.85	6.27	5.82	14.90	15.74	0.54	2.98	5.21	5.21
50th-Percentile Queue Length [ft/ln]	52.73	146.22	156.83	145.61	372.61	393.58	13.51	74.41	130.17	130.14
95th-Percentile Queue Length [veh/ln]	3.80	9.82	10.38	10.01	21.24	22.25	0.97	5.36	8.95	8.95
95th-Percentile Queue Length [ft/ln]	94.92	245.38	259.52	250.33	530.89	556.26	24.31	133.93	223.73	223.68

Movement, Approach, & Intersection Results

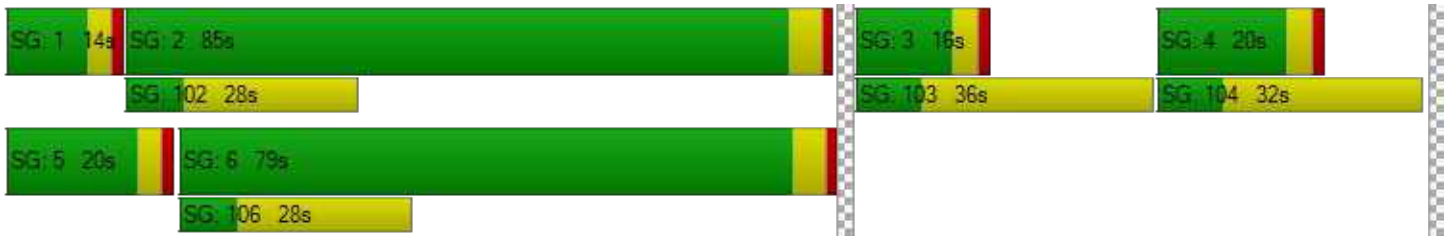
d_M, Delay for Movement [s/veh]	65.77	12.97	13.24	102.82	17.59	18.68	55.04	55.04	59.64	59.36	59.37	59.37
Movement LOS	E	B	B	F	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	15.43			30.29			59.24			59.36		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	29.02											
Intersection LOS	C											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.07	56.07	56.99	56.99
l_p,int, Pedestrian LOS Score for Intersectio	3.027	3.195	2.396	2.158
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1096	175	234
d_b, Bicycle Delay [s]	11.23	13.81	56.28	52.67
l_b,int, Bicycle LOS Score for Intersection	2.267	3.113	1.878	2.063
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	75.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	288	735	120	28	881	396	537	54	227	57	66	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	735	120	28	881	396	537	54	227	57	66	21
Peak Hour Factor	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	186	30	7	223	100	136	14	57	14	17	5
Total Analysis Volume [veh/h]	292	745	122	28	893	401	544	55	230	58	67	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	20	80	80	18	72	72	35	35	35	0	35	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	58	58	15	58	58	37	45	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	97	97	5	90	90	31	31	31	13	13
g / C, Green / Cycle	0.08	0.63	0.63	0.03	0.58	0.58	0.20	0.20	0.20	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.16	0.24	0.24	0.02	0.36	0.37	0.17	0.17	0.15	0.03	0.05
s, saturation flow rate [veh/h]	1781	1870	1767	1781	1870	1676	1781	1797	1555	1781	1789
c, Capacity [veh/h]	150	1174	1109	59	1079	967	359	362	313	153	154
d1, Uniform Delay [s]	71.04	14.09	14.13	73.65	21.77	21.95	59.43	59.38	57.83	66.97	68.14
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	451.38	0.93	1.00	2.17	2.77	3.20	3.82	3.70	2.49	1.14	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.95	0.38	0.38	0.47	0.63	0.64	0.83	0.83	0.73	0.38	0.57
d, Delay for Lane Group [s/veh]	522.42	15.02	15.13	75.82	24.55	25.15	63.25	63.08	60.32	68.12	70.62
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	24.70	7.81	7.48	1.13	16.87	15.56	11.78	11.81	8.75	2.25	3.50
50th-Percentile Queue Length [ft/ln]	617.59	195.16	186.99	28.30	421.78	388.98	294.49	295.32	218.84	56.26	87.61
95th-Percentile Queue Length [veh/ln]	39.12	12.39	11.96	2.04	23.61	22.03	17.41	17.45	13.61	4.05	6.31
95th-Percentile Queue Length [ft/ln]	978.10	309.71	299.12	50.94	590.19	550.70	435.20	436.23	340.15	101.26	157.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	522.42	15.06	15.13	75.82	24.69	25.15	63.17	63.08	60.32	68.12	70.62	70.62
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	142.89			25.91			62.37			69.62		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	75.74											
Intersection LOS	E											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.92	66.92	66.92	66.92
l_p,int, Pedestrian LOS Score for Intersectio	2.922	2.978	2.480	2.061
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	529	423
d_b, Bicycle Delay [s]	33.36	33.32	42.08	48.20
l_b,int, Bicycle LOS Score for Intersection	2.516	2.650	2.927	1.801
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.916

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	604	72	337	812	62	193	44	1	50	49	387
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	604	72	337	812	62	193	44	1	50	49	387
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	159	19	89	214	16	51	12	0	13	13	102
Total Analysis Volume [veh/h]	0	638	76	356	857	65	204	46	1	53	52	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	56	34	56	22	56	34	34	34	34	0	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	32	32	19	54	54	32	32
g / C, Green / Cycle	0.35	0.35	0.21	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.20	0.21	0.20	0.25	0.25	0.47	0.29
s, saturation flow rate [veh/h]	1870	1626	1781	1870	1817	534	1762
c, Capacity [veh/h]	695	569	377	1113	1082	261	667
d1, Uniform Delay [s]	23.90	23.96	35.02	9.84	9.86	34.49	27.04
k, delay calibration	0.50	0.50	0.17	0.50	0.50	0.50	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.09	4.37	16.64	1.16	1.21	46.43	7.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.59	0.94	0.42	0.42	0.96	0.77
d, Delay for Lane Group [s/veh]	26.99	28.33	51.65	11.00	11.07	80.92	34.35
Lane Group LOS	C	C	D	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.88	6.21	9.14	4.72	4.64	8.98	11.08
50th-Percentile Queue Length [ft/ln]	171.91	155.35	228.50	118.09	115.98	224.61	276.89
95th-Percentile Queue Length [veh/ln]	11.18	10.30	14.10	8.29	8.17	13.90	16.53
95th-Percentile Queue Length [ft/ln]	279.42	257.55	352.45	207.19	204.29	347.50	413.33

Movement, Approach, & Intersection Results

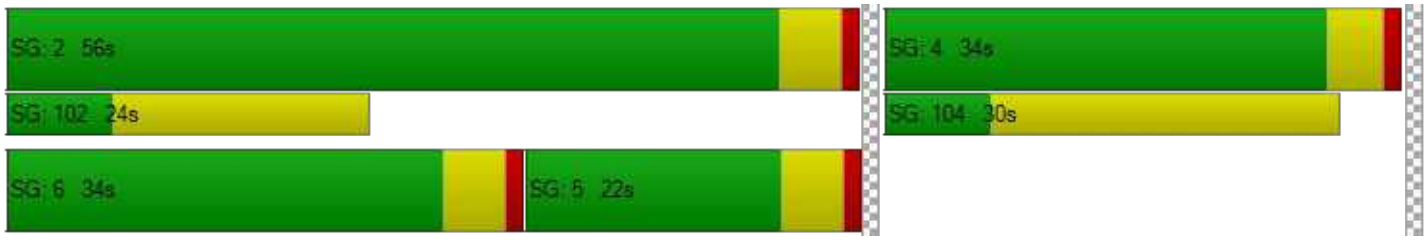
d_M, Delay for Movement [s/veh]	26.99	27.53	28.33	51.65	11.03	11.07	80.92	80.92	80.92	34.35	34.35	34.35
Movement LOS	C	C	C	D	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	27.62			22.35			80.92			34.35		
Approach LOS	C			C			F			C		
d_I, Intersection Delay [s/veh]	31.28											
Intersection LOS	C											
Intersection V/C	0.916											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	28.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	20.78
l_p,int, Pedestrian LOS Score for Intersectio	2.668	3.165	1.864	2.177
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	1130	650	650
d_b, Bicycle Delay [s]	20.79	8.54	20.54	20.53
l_b,int, Bicycle LOS Score for Intersection	2.149	2.614	1.974	2.408
Bicycle LOS	B	B	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	95	511	422	524	400	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	511	422	524	400	83
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	137	113	141	108	22
Total Analysis Volume [veh/h]	102	549	454	563	430	89
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing m	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	33	44	44	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	48	48	93	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	5	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	Yes	No	No	No	Yes	
Pedestrian Recall	No	No	No	Yes	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.60
g_i, Effective Green Time [s]	35	76	39	91	48
g / C, Green / Cycle	0.27	0.58	0.30	0.70	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.25	0.30	0.29
s, saturation flow rate [veh/h]	1781	1574	1781	1870	1793
c, Capacity [veh/h]	479	886	530	1311	658
d1, Uniform Delay [s]	36.85	18.98	43.05	8.32	36.66
k, delay calibration	0.50	0.50	0.31	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	3.25	10.87	1.03	9.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.62	0.86	0.43	0.79
d, Delay for Lane Group [s/veh]	37.86	22.23	53.93	9.35	45.95
Lane Group LOS	D	C	D	A	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.68	11.62	15.17	6.57	16.12
50th-Percentile Queue Length [ft/ln]	66.97	290.60	379.16	164.33	403.08
95th-Percentile Queue Length [veh/ln]	4.82	17.22	21.55	10.78	22.71
95th-Percentile Queue Length [ft/ln]	120.55	430.39	538.83	269.45	567.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.86	22.23	53.93	9.35	45.95	45.95
Movement LOS	D	C	D	A	D	D
d_A, Approach Delay [s/veh]	24.68		29.25		45.95	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	31.85					
Intersection LOS	C					
Intersection V/C	0.819					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	56.33	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.346	2.718	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	1361	623
d_b, Bicycle Delay [s]	36.98	6.76	31.40
l_b,int, Bicycle LOS Score for Intersection	1.560	3.238	2.416
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	402.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	72	26	16	146	143	329	417	627	230	281	536	134
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	26	16	146	143	329	417	627	230	281	536	134
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	7	4	40	39	90	115	172	63	77	147	37
Total Analysis Volume [veh/h]	79	29	18	160	157	362	458	689	253	309	589	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing m	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	62	25	62	57	25	57	28	62	25	22	57	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	55	38	55	83	38	83	9	55	38	37	83	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	2.5	2.6	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.50	4.60	4.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.50	2.60	2.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	43	43	43	43	5	52	52	26	73	73
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.04	0.40	0.40	0.20	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.09	0.03	0.22	0.24	0.26	0.19	0.18	0.17	0.20	0.21
s, saturation flow rate [veh/h]	881	1737	1472	1531	1781	3560	1380	1781	1870	1694
c, Capacity [veh/h]	167	578	532	510	69	1419	550	360	1054	955
d1, Uniform Delay [s]	54.47	29.72	38.35	37.44	62.50	29.15	27.96	50.06	15.53	15.64
k, delay calibration	0.10	0.10	0.23	0.28	0.50	0.50	0.50	0.25	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.98	0.06	2.23	4.63	2588.98	1.19	2.76	12.70	0.96	1.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.08	0.60	0.71	6.69	0.49	0.46	0.86	0.36	0.37
d, Delay for Lane Group [s/veh]	56.45	29.77	40.58	42.07	2651.48	30.34	30.72	62.75	16.49	16.75
Lane Group LOS	E	C	D	D	F	C	C	E	B	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.62	1.06	9.05	10.59	51.52	8.18	6.02	10.88	6.33	5.97
50th-Percentile Queue Length [ft/ln]	65.45	26.38	226.20	264.84	1288.00	204.57	150.50	271.95	158.18	149.32
95th-Percentile Queue Length [veh/ln]	4.71	1.90	13.98	15.93	75.17	12.87	10.04	16.29	10.45	9.98
95th-Percentile Queue Length [ft/ln]	117.81	47.48	349.53	398.28	1879.24	321.85	251.10	407.18	261.31	249.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.45	29.77	29.77	40.58	40.58	42.07	2651.48	30.34	30.72	62.75	16.58	16.75
Movement LOS	E	C	C	D	D	D	F	C	C	E	B	B
d_A, Approach Delay [s/veh]	46.50			41.37			887.90			30.26		
Approach LOS	D			D			F			C		
d_I, Intersection Delay [s/veh]	402.66											
Intersection LOS	F											
Intersection V/C	0.726											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	54.47	54.47
l_p,int, Pedestrian LOS Score for Intersectio	2.150	2.371	3.109	2.925
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	777	1208
d_b, Bicycle Delay [s]	35.96	36.23	24.49	10.40
l_b,int, Bicycle LOS Score for Intersection	1.768	2.680	2.715	2.422
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	548.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.315

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	20	0	61	7	0	87	160	764	6	115	593	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	61	7	0	87	160	764	6	115	593	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	17	2	0	24	44	212	2	32	165	17
Total Analysis Volume [veh/h]	22	0	68	8	0	97	178	849	7	128	659	69
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

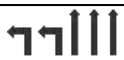
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.31	0.00	0.15	0.41	0.00	0.27	0.20	0.01	0.00	0.16	0.01	0.00
d_M, Delay for Movement [s/veh]	548.77	447.94	341.78	228.60	162.83	53.85	10.16	0.00	0.00	10.48	0.00	0.00
Movement LOS	F	F	F	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	7.87	7.87	7.87	3.90	3.90	3.90	0.76	0.00	0.00	0.58	0.00	0.00
95th-Percentile Queue Length [ft/ln]	196.83	196.83	196.83	97.51	97.51	97.51	18.97	0.00	0.00	14.53	0.00	0.00
d_A, Approach Delay [s/veh]	392.38			67.17			1.75			1.57		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	21.83											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	1030	81	1211	3493	159	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1030	81	1211	3493	159	388
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	279	22	328	945	43	105
Total Analysis Volume [veh/h]	1115	88	1311	3780	172	420
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	113.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	60	144	84	144	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	5
Pedestrian Clearance [s]	35	13	0	13	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	31	31	47	81	11	62
g / C, Green / Cycle	0.30	0.30	0.45	0.79	0.11	0.60
(v / s)_i Volume / Saturation Flow Rate	0.22	0.06	0.38	0.74	0.05	0.10
s, saturation flow rate [veh/h]	5094	1569	3459	5094	3459	4220
c, Capacity [veh/h]	1544	476	1572	4038	383	2427
d1, Uniform Delay [s]	31.94	26.41	24.61	8.55	42.74	10.30
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.65	0.19	1.22	1.35	0.82	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.19	0.83	0.94	0.45	0.17
d, Delay for Lane Group [s/veh]	32.59	26.60	25.83	9.90	43.57	10.33
Lane Group LOS	C	C	C	A	D	B
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.64	1.50	12.45	9.74	2.06	1.41
50th-Percentile Queue Length [ft/ln]	190.94	37.54	311.13	243.62	51.43	35.19
95th-Percentile Queue Length [veh/ln]	12.17	2.70	18.23	14.86	3.70	2.53
95th-Percentile Queue Length [ft/ln]	304.25	67.57	455.77	371.61	92.58	63.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.59	26.60	25.83	9.90	43.57	10.33
Movement LOS	C	C	C	A	D	B
d_A, Approach Delay [s/veh]	32.16		14.00		19.99	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	17.69					
Intersection LOS	B					
Intersection V/C	0.883					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.73	0.00	42.73
l_p,int, Pedestrian LOS Score for Intersectio	3.918	0.000	2.925
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	993	2690	565
d_b, Bicycle Delay [s]	13.00	6.11	26.43
l_b,int, Bicycle LOS Score for Intersection	2.221	4.360	1.670
Bicycle LOS	B	E	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	114	248	414	10	31	27	60	754	248	806	2459	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	248	414	10	31	27	60	754	248	806	2459	41
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	66	110	3	8	7	16	201	66	215	655	11
Total Analysis Volume [veh/h]	122	264	441	11	33	29	64	804	264	859	2622	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing m	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	149	50	25	50	149
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	7	0	7	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	16	20	45	1	6	6	59	33	33	59	50	50
g / C, Green / Cycle	0.17	0.21	0.47	0.01	0.06	0.06	0.62	0.35	0.35	0.62	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.15	0.12	0.10	0.01	0.01	0.02	0.17	0.16	0.17	0.49	0.51	0.03
s, saturation flow rate [veh/h]	797	2249	4220	937	3560	1552	368	5094	1589	1746	5094	1589
c, Capacity [veh/h]	133	468	2000	13	225	98	225	1773	553	1083	2673	834
d1, Uniform Delay [s]	39.08	33.87	14.73	46.96	42.24	42.62	21.31	24.06	24.30	13.17	22.20	11.08
k, delay calibration	0.20	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	32.41	1.07	0.05	86.69	0.30	1.66	0.69	0.18	0.64	1.36	4.82	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.56	0.22	0.88	0.15	0.30	0.28	0.45	0.48	0.79	0.98	0.05
d, Delay for Lane Group [s/veh]	71.49	34.93	14.79	133.65	42.54	44.29	22.00	24.24	24.94	14.53	27.02	11.10
Lane Group LOS	E	C	B	F	D	D	C	C	C	B	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.89	2.71	1.75	0.57	0.38	0.71	0.26	4.60	4.64	4.70	18.64	0.44
50th-Percentile Queue Length [ft/ln]	97.34	67.64	43.78	14.13	9.54	17.65	6.61	114.90	116.02	117.38	465.99	11.11
95th-Percentile Queue Length [veh/ln]	7.01	4.87	3.15	1.02	0.69	1.27	0.48	8.11	8.17	8.25	25.72	0.80
95th-Percentile Queue Length [ft/ln]	175.20	121.76	78.81	25.43	17.18	31.76	11.89	202.79	204.34	206.22	643.01	20.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.49	34.93	14.79	133.65	42.54	44.29	22.00	24.24	24.94	14.53	27.02	11.10
Movement LOS	E	C	B	F	D	D	C	C	C	B	C	B
d_A, Approach Delay [s/veh]	29.58			56.96			24.28			23.77		
Approach LOS	C			E			C			C		
d_I, Intersection Delay [s/veh]	25.18											
Intersection LOS	C											
Intersection V/C	0.807											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.06	0.00	39.06	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.531	0.000	3.178	0.000
Crosswalk LOS	D	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	789	649	3128	1910
d_b, Bicycle Delay [s]	17.45	21.75	15.15	0.10
l_b,int, Bicycle LOS Score for Intersection	2.242	1.620	2.182	3.498
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	59.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.905

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	116	764	74	495	784	19	59	16	79	16	6	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	764	74	495	784	19	59	16	79	16	6	155
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	196	19	127	201	5	15	4	20	4	2	40
Total Analysis Volume [veh/h]	119	783	76	507	803	19	60	16	81	16	6	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing m	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	90	73	73	90	78	78	33	33	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.60	0.60	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.17	0.52	0.52	0.38	0.42	0.42	0.05	0.14	0.01	0.20
s, saturation flow rate [veh/h]	680	837	807	1344	984	972	1176	711	1283	824
c, Capacity [veh/h]	349	471	454	422	592	585	109	179	187	208
d1, Uniform Delay [s]	13.61	25.98	26.12	28.16	17.73	17.80	62.26	42.16	51.31	45.33
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.06	0.11	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.64	26.77	28.19	111.28	6.65	6.84	4.23	1.42	0.20	15.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.93	0.93	1.20	0.70	0.70	0.55	0.54	0.09	0.79
d, Delay for Lane Group [s/veh]	16.24	52.74	54.31	139.44	24.38	24.64	66.49	43.58	51.51	61.27
Lane Group LOS	B	D	D	F	C	C	E	D	D	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.34	14.87	14.63	8.78	9.28	9.27	2.13	2.81	0.40	5.93
50th-Percentile Queue Length [ft/ln]	33.51	371.66	365.81	219.43	231.88	231.65	53.37	70.14	10.12	148.36
95th-Percentile Queue Length [veh/ln]	2.41	21.19	20.91	15.38	14.27	14.26	3.84	5.05	0.73	9.93
95th-Percentile Queue Length [ft/ln]	60.31	529.74	522.64	384.42	356.75	356.46	96.07	126.25	18.21	248.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.24	53.44	54.31	139.44	24.50	24.64	66.49	43.58	43.58	51.51	61.27	61.27
Movement LOS	B	D	D	F	C	C	E	D	D	D	E	E
d_A, Approach Delay [s/veh]	48.98			68.35			52.34			60.41		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	59.70											
Intersection LOS	E											
Intersection V/C	0.905											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.29	56.29	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	2.901	3.023	2.144	2.724
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1124	1077	505	508
d_b, Bicycle Delay [s]	12.57	14.10	36.40	36.36
l_b,int, Bicycle LOS Score for Intersection	2.366	2.656	1.819	1.858
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	83.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	155	674	919	82	174	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	674	919	82	174	83
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	174	238	21	45	21
Total Analysis Volume [veh/h]	160	697	950	85	180	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing m	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	130	130	130	30	30
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	130	114	114	30	30
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	133	117	117	20	20
g / C, Green / Cycle	0.08	0.83	0.73	0.73	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.20	0.44	0.62	0.64	0.11	0.11
s, saturation flow rate [veh/h]	797	1593	837	809	1705	803
c, Capacity [veh/h]	65	1321	610	590	217	102
d1, Uniform Delay [s]	73.59	4.16	15.44	16.33	68.24	68.11
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.09
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	702.33	1.51	13.77	16.73	6.16	13.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.46	0.53	0.85	0.88	0.83	0.84
d, Delay for Lane Group [s/veh]	775.92	5.67	29.21	33.05	74.40	82.07
Lane Group LOS	F	A	C	C	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	15.32	2.91	14.14	15.23	7.61	3.85
50th-Percentile Queue Length [ft/ln]	383.10	72.74	353.47	380.68	190.15	96.16
95th-Percentile Queue Length [veh/ln]	26.03	5.24	20.31	21.63	12.13	6.92
95th-Percentile Queue Length [ft/ln]	650.65	130.94	507.63	540.67	303.22	173.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	775.92	5.67	30.96	33.05	74.40	82.07
Movement LOS	F	A	C	C	E	F
d_A, Approach Delay [s/veh]	149.48		31.13		76.88	
Approach LOS	F		C		E	
d_I, Intersection Delay [s/veh]	83.77					
Intersection LOS	F					
Intersection V/C	1.004					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.31	71.31	69.44
l_p,int, Pedestrian LOS Score for Intersectio	2.820	2.781	2.134
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1574	1374	337
d_b, Bicycle Delay [s]	3.65	7.85	55.36
l_b,int, Bicycle LOS Score for Intersection	2.267	2.413	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	55.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.971

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	773	949	94	1011	525	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	773	949	94	1011	525	80
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	203	249	25	266	138	21
Total Analysis Volume [veh/h]	813	998	99	1063	552	84
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	135	135	21	135	30	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	115	115	15	130	30	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	112	112	11	126	27	27
g / C, Green / Cycle	0.70	0.70	0.07	0.79	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.51	0.66	0.06	0.67	0.20	0.20
s, saturation flow rate [veh/h]	1593	1516	1781	1593	1406	1731
c, Capacity [veh/h]	1117	1064	120	1255	235	290
d1, Uniform Delay [s]	14.59	19.19	73.79	10.86	66.73	66.73
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.16	16.24	5.26	7.20	127.11	123.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.94	0.82	0.85	1.21	1.21
d, Delay for Lane Group [s/veh]	18.75	35.43	79.05	18.06	193.84	189.98
Lane Group LOS	B	D	E	B	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.89	31.43	4.18	11.02	17.96	21.80
50th-Percentile Queue Length [ft/ln]	222.25	785.69	104.40	275.45	449.00	545.04
95th-Percentile Queue Length [veh/ln]	13.78	40.62	7.52	16.46	27.21	32.29
95th-Percentile Queue Length [ft/ln]	344.50	1015.54	187.91	411.54	680.37	807.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.75	35.43	79.05	18.06	192.00	189.98
Movement LOS	B	D	E	B	F	F
d_A, Approach Delay [s/veh]	27.94		23.25		191.71	
Approach LOS	C		C		F	
d_I, Intersection Delay [s/veh]	55.29					
Intersection LOS	E					
Intersection V/C	0.971					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.531
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1386	1574	335
d_b, Bicycle Delay [s]	7.59	3.64	55.54
l_b,int, Bicycle LOS Score for Intersection	3.054	2.518	2.609
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	326.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.431

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	175	1208	448	66	1398	20	22	126	390	402	132	221
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	1208	448	66	1398	20	22	126	390	402	132	221
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	328	121	18	379	5	6	34	106	109	36	60
Total Analysis Volume [veh/h]	190	1310	486	72	1516	22	24	137	423	436	143	240
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	80	80	21	80	80	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	31	31	39	59	59	10	29	29	31	50	50
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	20	20	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	8	34	34	7	33	33	3	36	36	38	70	70
g / C, Green / Cycle	0.06	0.26	0.26	0.05	0.25	0.25	0.02	0.28	0.28	0.29	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.36	0.04	0.63	0.64	0.02	0.09	0.27	0.28	0.17	0.35
s, saturation flow rate [veh/h]	1781	3560	1580	1781	1593	829	1528	1604	1539	1547	837	690
c, Capacity [veh/h]	110	944	419	91	406	211	34	441	423	454	450	371
d1, Uniform Delay [s]	61.00	47.77	47.77	60.97	48.44	48.44	63.13	37.34	46.54	45.22	16.72	20.92
k, delay calibration	0.16	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.16	0.04	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	342.12	142.49	176.83	5.57	678.04	686.48	23.19	0.15	24.85	5.89	0.40	6.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.73	1.30	1.36	0.79	2.49	2.49	0.70	0.31	1.00	0.96	0.32	0.65
d, Delay for Lane Group [s/veh]	403.12	190.25	224.60	66.54	726.48	734.92	86.31	37.49	71.39	51.11	17.12	27.89
Lane Group LOS	F	F	F	E	F	F	F	D	E	D	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.98	33.62	33.83	2.51	44.85	47.19	1.01	3.50	16.31	7.24	2.42	5.69
50th-Percentile Queue Length [ft/ln]	349.58	840.49	845.69	62.81	1121.17	1179.64	25.25	87.45	407.83	181.09	60.46	142.32
95th-Percentile Queue Length [veh/ln]	23.01	49.72	50.92	4.52	74.11	77.69	1.82	6.30	22.94	11.66	4.35	9.61
95th-Percentile Queue Length [ft/ln]	575.31	1242.91	1272.95	113.06	1852.71	1942.30	45.45	157.41	573.43	291.44	108.83	240.14

Movement, Approach, & Intersection Results

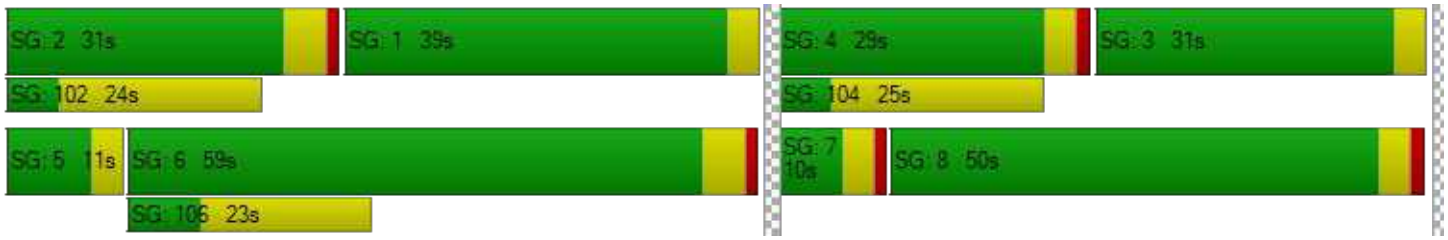
d_M, Delay for Movement [s/veh]	403.12	192.44	224.60	66.54	729.29	734.92	86.31	37.49	71.39	51.11	17.12	27.89
Movement LOS	F	F	F	E	F	F	F	D	E	D	B	C
d_A, Approach Delay [s/veh]	220.47			699.73			64.05			38.37		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	326.71											
Intersection LOS	F											
Intersection V/C	1.431											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	46.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	27.14	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.423	2.953	2.378	2.614
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	831	385	708
d_b, Bicycle Delay [s]	41.64	22.23	42.51	27.33
l_b,int, Bicycle LOS Score for Intersection	2.652	2.445	2.523	2.911
Bicycle LOS	B	B	B	C

Sequence

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	110.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.321

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	105	1291	987	732	403	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	1291	987	732	403	56
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	340	260	193	106	15
Total Analysis Volume [veh/h]	111	1362	1041	772	425	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		2		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	12	60	48	48	20	20
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	9	49	36	36	36	36
g / C, Green / Cycle	0.10	0.52	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.08	0.52	0.37	0.63	0.45	0.04
s, saturation flow rate [veh/h]	1312	2623	2792	1227	937	1569
c, Capacity [veh/h]	129	1356	1065	468	356	597
d1, Uniform Delay [s]	41.89	22.80	28.81	28.81	29.26	18.83
k, delay calibration	0.04	0.24	0.15	0.50	0.50	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	17.81	10.93	301.76	111.05	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	1.00	0.98	1.65	1.19	0.10
d, Delay for Lane Group [s/veh]	48.02	40.61	39.74	330.58	140.31	18.86
Lane Group LOS	D	F	D	F	F	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.74	17.11	12.52	49.03	18.69	0.82
50th-Percentile Queue Length [ft/ln]	68.46	427.81	312.97	1225.85	467.13	20.60
95th-Percentile Queue Length [veh/ln]	4.93	23.97	18.32	78.04	28.71	1.48
95th-Percentile Queue Length [ft/ln]	123.23	599.30	458.04	1951.00	717.69	37.08

Movement, Approach, & Intersection Results

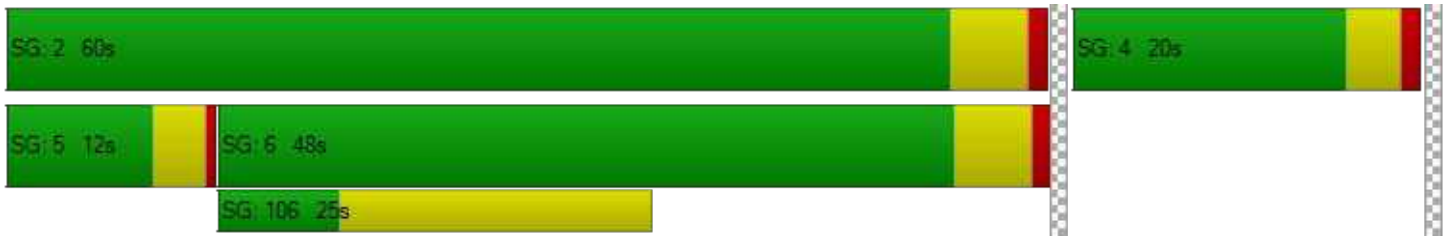
d_M, Delay for Movement [s/veh]	48.02	40.61	39.74	330.58	140.31	18.86
Movement LOS	D	F	D	F	F	B
d_A, Approach Delay [s/veh]	41.17		163.58		125.50	
Approach LOS	D		F		F	
d_I, Intersection Delay [s/veh]	110.87					
Intersection LOS	F					
Intersection V/C	1.321					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	36.88
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.386
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1154	900	334
d_b, Bicycle Delay [s]	8.51	14.32	32.78
l_b,int, Bicycle LOS Score for Intersection	2.775	3.055	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	87.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.961

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	19	784	8	36	791	46	41	10	16	78	6	344
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	784	8	36	791	46	41	10	16	78	6	344
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	203	2	9	204	12	11	3	4	20	2	89
Total Analysis Volume [veh/h]	20	811	8	37	818	48	42	10	17	81	6	356
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	152	152	152	152	152	152	152	152	152	152
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	3	86	86	6	90	12	12	12	30	30
g / C, Green / Cycle	0.02	0.57	0.57	0.04	0.59	0.08	0.08	0.08	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.25	0.04	0.57	0.02	0.02	0.01	0.09	0.31
s, saturation flow rate [veh/h]	937	1422	1863	937	1527	937	1376	1324	937	1182
c, Capacity [veh/h]	17	807	1058	39	903	71	104	100	184	233
d1, Uniform Delay [s]	74.83	18.97	18.98	72.86	29.43	66.67	66.65	65.86	53.85	61.25
k, delay calibration	0.11	0.23	0.23	0.11	0.42	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	147.80	0.80	0.62	52.91	19.08	2.33	1.57	0.79	1.64	270.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.44	0.44	0.94	0.96	0.30	0.30	0.17	0.44	1.56
d, Delay for Lane Group [s/veh]	222.64	19.78	19.60	125.78	48.51	69.00	68.22	66.66	55.49	331.87
Lane Group LOS	F	B	B	F	D	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.40	7.57	9.87	2.04	34.08	0.85	1.21	0.66	2.86	26.55
50th-Percentile Queue Length [ft/ln]	34.98	189.14	246.63	50.94	852.01	21.30	30.37	16.51	71.56	663.76
95th-Percentile Queue Length [veh/ln]	2.52	12.08	15.02	3.67	43.65	1.53	2.19	1.19	5.15	42.05
95th-Percentile Queue Length [ft/ln]	62.96	301.91	375.40	91.68	1091.36	38.35	54.67	29.72	128.81	1051.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	222.64	19.68	19.60	125.78	48.51	48.51	68.63	68.22	66.66	55.49	331.87	331.87
Movement LOS	F	B	B	F	D	D	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	24.51			51.67			68.07			281.34		
Approach LOS	C			D			E			F		
d_I, Intersection Delay [s/veh]	87.20											
Intersection LOS	F											
Intersection V/C	0.961											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.59	65.59	65.59	65.59
l_p,int, Pedestrian LOS Score for Intersectio	2.513	2.764	2.168	2.100
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	262	262	394	394
d_b, Bicycle Delay [s]	57.59	57.62	49.17	49.17
l_b,int, Bicycle LOS Score for Intersection	2.252	3.050	1.673	2.291
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	34	638	4	5	687	184	252	3	46	3	7	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	638	4	5	687	184	252	3	46	3	7	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	168	1	1	181	48	66	1	12	1	2	1
Total Analysis Volume [veh/h]	36	672	4	5	723	194	265	3	48	3	7	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing m	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			59			13			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	94	94	94	94	94	94	36	36	36	0	36	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	90	90	90	90	32	32
g / C, Green / Cycle	0.69	0.69	0.69	0.69	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.06	0.36	0.01	0.52	0.23	0.01
s, saturation flow rate [veh/h]	609	1868	763	1778	1364	1777
c, Capacity [veh/h]	273	1297	442	1235	381	464
d1, Uniform Delay [s]	28.48	9.49	15.88	12.50	48.15	37.59
k, delay calibration	0.50	0.50	0.50	0.50	0.41	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	1.50	0.05	4.06	15.54	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.52	0.01	0.74	0.83	0.03
d, Delay for Lane Group [s/veh]	29.47	10.99	15.92	16.55	63.69	37.62
Lane Group LOS	C	B	B	B	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.86	9.42	0.08	16.83	11.68	0.35
50th-Percentile Queue Length [ft/ln]	21.54	235.49	2.02	420.80	292.12	8.79
95th-Percentile Queue Length [veh/ln]	1.55	14.45	0.15	23.56	17.29	0.63
95th-Percentile Queue Length [ft/ln]	38.77	361.33	3.64	589.01	432.27	15.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.47	10.99	10.99	15.92	16.55	16.55	63.69	63.69	63.69	37.62	37.62	37.62
Movement LOS	C	B	B	B	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	11.92			16.55			63.69			37.62		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	22.61											
Intersection LOS	C											
Intersection V/C	0.790											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.43	54.43	54.43	54.43
l_p,int, Pedestrian LOS Score for Intersectio	2.365	2.940	2.053	1.750
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1384	1384	491	491
d_b, Bicycle Delay [s]	6.19	6.35	37.22	37.11
l_b,int, Bicycle LOS Score for Intersection	2.734	3.081	2.081	1.583
Bicycle LOS	B	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	4	504	160	35	702	1	49	98	12	152	112	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	504	160	35	702	1	49	98	12	152	112	114
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	135	43	9	188	0	13	26	3	41	30	30
Total Analysis Volume [veh/h]	4	538	171	37	750	1	52	105	13	162	120	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing m	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			32			7			13		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	64	64	64	64	64	64	26	26	26	0	26	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	61	61	61	61	20	20	20	20
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.05	0.40	0.05	0.06	0.13	0.14
s, saturation flow rate [veh/h]	711	1776	740	1869	1133	1820	1250	1685
c, Capacity [veh/h]	392	1210	408	1274	174	414	275	384
d1, Uniform Delay [s]	14.30	7.62	14.70	7.65	39.74	28.75	36.87	31.39
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	2.08	0.44	2.01	0.95	0.37	2.00	1.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.59	0.09	0.59	0.30	0.28	0.59	0.63
d, Delay for Lane Group [s/veh]	14.35	9.70	15.14	9.66	40.69	29.12	38.88	33.10
Lane Group LOS	B	A	B	A	D	C	D	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.05	6.96	0.49	7.37	1.15	2.15	3.59	4.89
50th-Percentile Queue Length [ft/ln]	1.27	174.09	12.22	184.31	28.81	53.67	89.75	122.35
95th-Percentile Queue Length [veh/ln]	0.09	11.29	0.88	11.83	2.07	3.86	6.46	8.52
95th-Percentile Queue Length [ft/ln]	2.29	282.28	21.99	295.63	51.86	96.61	161.55	213.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.35	9.70	9.70	15.14	9.66	9.66	40.69	29.12	29.12	38.88	33.10	33.10
Movement LOS	B	A	A	B	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.73			9.92			32.66			35.42		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	16.68											
Intersection LOS	B											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.71	34.71	34.71	34.71
l_p,int, Pedestrian LOS Score for Intersectio	2.614	2.509	2.025	2.187
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1330	1330	486	486
d_b, Bicycle Delay [s]	5.12	5.13	25.89	25.97
l_b,int, Bicycle LOS Score for Intersection	2.736	2.860	1.840	2.226
Bicycle LOS	B	C	A	B

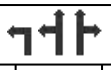
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	59.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	35	293	131	356	183	454	165	434	144	325	271	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	35	293	131	356	183	454	165	434	144	325	271	24
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	76	34	93	48	118	43	113	38	85	71	6
Total Analysis Volume [veh/h]	36	305	136	371	191	473	172	452	150	339	282	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10			2			10			2		
v_di, Inbound Pedestrian Volume crossing m	10			2			10			2		
v_co, Outbound Pedestrian Volume crossing	5			3			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			3			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	17			17			6			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	27	27	27	61	61	61	21	21	21	21	22	22	22
g / C, Green / Cycle	0.18	0.18	0.18	0.41	0.41	0.41	0.14	0.14	0.14	0.14	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.09	0.16	0.15	0.30	0.10	0.12	0.12	0.10	0.12	0.12	0.12
s, saturation flow rate [veh/h]	1781	1870	1487	1781	1841	1556	1781	1870	1870	1533	1781	1817	1815
c, Capacity [veh/h]	319	335	266	728	752	636	253	266	266	218	262	267	267
d1, Uniform Delay [s]	51.52	60.32	55.21	31.12	30.93	37.31	61.03	62.72	62.72	60.88	61.87	61.85	61.93
k, delay calibration	0.11	0.33	0.11	0.50	0.50	0.50	0.11	0.19	0.19	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	23.12	1.51	1.55	1.42	7.72	3.18	12.28	12.28	3.83	5.90	5.74	5.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.91	0.51	0.39	0.37	0.74	0.68	0.85	0.85	0.69	0.81	0.81	0.82
d, Delay for Lane Group [s/veh]	51.68	83.44	56.72	32.67	32.35	45.03	64.21	75.00	75.00	64.72	67.78	67.59	67.92
Lane Group LOS	D	F	E	C	C	D	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.16	13.55	4.76	7.65	7.59	16.18	6.47	9.35	9.35	5.67	8.29	8.43	8.52
50th-Percentile Queue Length [ft/ln]	29.08	338.86	119.12	191.37	189.86	404.52	161.8	233.6	233.6	141.7	207.27	210.63	212.92
95th-Percentile Queue Length [veh/ln]	2.09	19.59	8.34	12.19	12.11	22.78	10.65	14.36	14.36	9.57	13.01	13.19	13.30
95th-Percentile Queue Length [ft/ln]	52.35	489.80	208.62	304.80	302.85	569.44	266.1	359.0	359.0	239.3	325.33	329.63	332.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.68	83.44	56.72	32.59	32.35	45.03	64.21	75.00	64.72	67.71	67.82	67.92
Movement LOS	D	F	E	C	C	D	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	73.42			38.23			70.61			67.76		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	59.01											
Intersection LOS	E											
Intersection V/C	0.748											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersectio	2.366	2.783	4.316	2.637
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.43	39.69	50.30	44.75
l_b,int, Bicycle LOS Score for Intersection	2.347	3.267	3.023	2.093
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	53.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	415	53	21	466	47	195	197	17	137	247	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	415	53	21	466	47	195	197	17	137	247	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	115	15	6	129	13	54	55	5	38	69	15
Total Analysis Volume [veh/h]	23	461	59	23	518	52	217	219	19	152	274	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			19			18			18		
v_di, Inbound Pedestrian Volume crossing m	18			18			19			18		
v_co, Outbound Pedestrian Volume crossing	25			20			26			21		
v_ci, Inbound Pedestrian Volume crossing mi	26			21			25			20		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	52			17			11			37		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	4	4	5	5	5	4	4	4	4	4	4
Maximum Green [s]	20	71	71	20	71	71	30	26	30	26	30	26
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	44	44	10	44	44	28	28	28	28	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.70	0.00	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	79	71	79	71	26	26	30	30
g / C, Green / Cycle	0.53	0.48	0.53	0.48	0.17	0.17	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.03	0.29	0.02	0.31	0.12	0.13	0.09	0.19
s, saturation flow rate [veh/h]	912	1804	949	1825	1781	1816	1781	1738
c, Capacity [veh/h]	352	860	385	869	311	317	359	350
d1, Uniform Delay [s]	21.15	28.69	20.24	29.69	57.82	58.43	51.96	58.87
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	3.15	0.06	3.84	12.29	15.12	3.64	38.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.60	0.06	0.66	0.70	0.75	0.42	0.96
d, Delay for Lane Group [s/veh]	21.51	31.84	20.31	33.54	70.11	73.55	55.60	97.31
Lane Group LOS	C	C	C	C	E	E	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	14.46	0.39	16.48	8.79	9.89	5.41	16.34
50th-Percentile Queue Length [ft/ln]	10.54	361.56	9.83	412.09	219.68	247.36	135.29	408.60
95th-Percentile Queue Length [veh/ln]	0.76	20.70	0.71	23.14	13.65	15.05	9.23	22.97
95th-Percentile Queue Length [ft/ln]	18.96	517.48	17.70	578.55	341.22	376.32	230.66	574.35

Movement, Approach, & Intersection Results

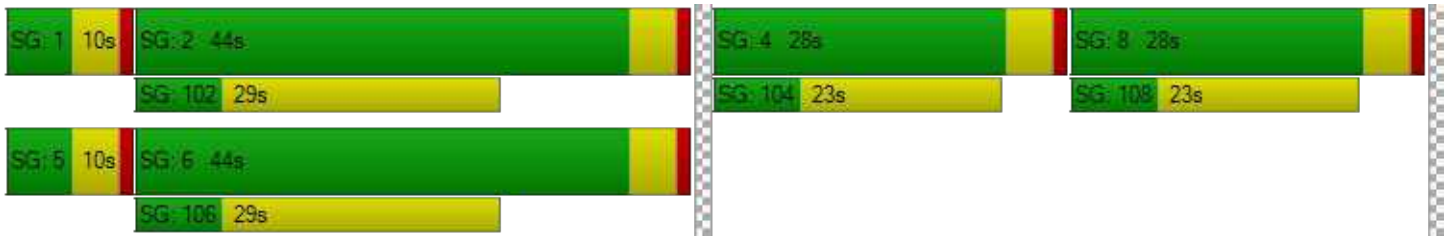
d_M, Delay for Movement [s/veh]	21.51	31.84	31.84	20.31	33.54	33.54	70.11	73.55	73.55	55.60	97.31	97.31
Movement LOS	C	C	C	C	C	C	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	31.40			33.03			71.91			84.29		
Approach LOS	C			C			E			F		
d_I, Intersection Delay [s/veh]	53.13											
Intersection LOS	D											
Intersection V/C	0.661											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.88	63.88	63.88	63.88
l_p,int, Pedestrian LOS Score for Intersectio	2.399	2.362	2.244	2.192
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	528	313	313
d_b, Bicycle Delay [s]	41.43	40.70	53.28	53.99
l_b,int, Bicycle LOS Score for Intersection	2.456	2.538	2.310	2.363
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	50	281	97	13	339	72	113	194	8	94	242	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	281	97	13	339	72	113	194	8	94	242	49
Peak Hour Factor	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	84	29	4	101	21	34	58	2	28	72	15
Total Analysis Volume [veh/h]	60	335	116	15	404	86	135	231	10	112	288	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	13			32			14			33		
v_di, Inbound Pedestrian Volume crossing m	14			33			13			32		
v_co, Outbound Pedestrian Volume crossing	12			26			25			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			25			26			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			39			21			32		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	87	87	87	87
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	30	30	20	24
g / C, Green / Cycle	0.35	0.35	0.23	0.28
(v / s)_i Volume / Saturation Flow Rate	0.35	0.29	0.21	0.25
s, saturation flow rate [veh/h]	1479	1758	1829	1807
c, Capacity [veh/h]	557	650	427	502
d1, Uniform Delay [s]	27.87	26.10	32.10	30.31
k, delay calibration	0.45	0.32	0.15	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.50	5.89	8.23	13.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.78	0.88	0.91
d, Delay for Lane Group [s/veh]	48.37	31.99	40.33	43.32
Lane Group LOS	D	C	D	D
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	13.45	10.33	8.46	10.71
50th-Percentile Queue Length [ft/ln]	336.18	258.37	211.39	267.86
95th-Percentile Queue Length [veh/ln]	19.46	15.61	13.22	16.08
95th-Percentile Queue Length [ft/ln]	486.52	390.18	330.61	402.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.37	48.37	48.37	31.99	31.99	31.99	40.33	40.33	40.33	43.32	43.32	43.32
Movement LOS	D	D	D	C	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	48.37			31.99			40.33			43.32		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	41.01											
Intersection LOS	D											
Intersection V/C	0.843											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.03	34.79	33.03	33.03
l_p,int, Pedestrian LOS Score for Intersectio	2.163	2.105	2.057	2.205
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	692	692	692	692
d_b, Bicycle Delay [s]	18.78	18.89	18.72	18.82
l_b,int, Bicycle LOS Score for Intersection	2.403	2.393	2.180	2.315
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	76.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.332

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	4	16	8	118	10	387	19	973	126	343	1506	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	8	118	10	387	19	973	126	343	1506	26
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	31	3	101	5	254	33	90	394	7
Total Analysis Volume [veh/h]	4	17	8	123	10	405	20	1018	132	359	1575	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	40	0	0	40	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	40	0	0	40	0	15	85	0	25	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	34	34	34	34	6	78	78	22	94	94
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.04	0.52	0.52	0.15	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	3.73	0.26	0.01	0.29	0.08	0.20	0.30	0.30
s, saturation flow rate [veh/h]	465	1589	36	1564	1781	3560	1555	1781	3560	1851
c, Capacity [veh/h]	134	361	54	355	67	1850	808	261	2239	1164
d1, Uniform Delay [s]	47.52	45.04	73.66	57.69	69.29	14.33	11.72	60.30	5.46	5.46
k, delay calibration	0.11	0.11	0.50	0.41	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.02	703.95	87.82	2.44	1.18	0.43	190.40	0.71	1.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.02	2.45	1.14	0.30	0.55	0.16	1.37	0.47	0.47
d, Delay for Lane Group [s/veh]	48.06	45.06	777.61	145.52	71.73	15.51	12.15	250.69	6.17	6.83
Lane Group LOS	D	D	F	F	E	B	B	F	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.66	0.24	12.73	22.05	0.79	7.66	1.62	23.46	3.53	3.89
50th-Percentile Queue Length [ft/ln]	16.43	6.09	318.13	551.32	19.70	191.42	40.57	586.61	88.22	97.31
95th-Percentile Queue Length [veh/ln]	1.18	0.44	22.91	32.00	1.42	12.19	2.92	35.84	6.35	7.01
95th-Percentile Queue Length [ft/ln]	29.58	10.97	572.63	800.09	35.46	304.87	73.02	895.91	158.79	175.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.06	48.06	45.06	777.61	777.61	145.52	71.73	15.51	12.15	250.69	6.39	6.83
Movement LOS	D	D	D	F	F	F	E	B	B	F	A	A
d_A, Approach Delay [s/veh]	47.23			301.78			16.09			51.12		
Approach LOS	D			F			B			D		
d_I, Intersection Delay [s/veh]	76.47											
Intersection LOS	E											
Intersection V/C	4.332											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.39	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.978	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1040	1174
d_b, Bicycle Delay [s]	44.84	44.93	17.29	12.83
l_b,int, Bicycle LOS Score for Intersection	1.607	2.447	2.525	2.638
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	334	198	92	68	307	37	111	858	43	89	1015	246
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	198	92	68	307	37	111	858	43	89	1015	246
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	53	25	18	83	10	30	231	12	24	273	66
Total Analysis Volume [veh/h]	359	213	99	73	330	40	119	923	46	96	1091	265
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			2			5			3		
v_di, Inbound Pedestrian Volume crossing m	5			3			5			2		
v_co, Outbound Pedestrian Volume crossing	2			6			6			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			6			6			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	18			15			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	32	0	0	32	0	15	71	0	15	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	28	28	28	29	29	29	12	68	68	10	66	66
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.19	0.08	0.45	0.45	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.07	0.04	0.18	0.03	0.07	0.26	0.03	0.05	0.31	0.17
s, saturation flow rate [veh/h]	1781	1845	1513	1781	1870	1531	1781	3560	1532	1781	3560	1539
c, Capacity [veh/h]	337	349	286	338	355	291	137	1617	696	117	1579	682
d1, Uniform Delay [s]	58.59	58.53	52.60	51.32	59.76	50.49	66.60	20.79	16.51	67.62	23.57	19.76
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.48	5.16	0.72	0.32	11.55	0.21	15.16	1.47	0.18	13.33	2.51	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.83	0.35	0.22	0.93	0.14	0.87	0.57	0.07	0.82	0.69	0.39
d, Delay for Lane Group [s/veh]	64.06	63.69	53.31	51.63	71.31	50.70	81.76	22.26	16.70	80.95	26.07	21.42
Lane Group LOS	E	E	D	D	E	D	F	C	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.85	11.14	3.32	2.40	13.60	1.29	4.95	9.01	0.70	4.00	12.73	4.83
50th-Percentile Queue Length [ft/ln]	271.15	278.61	82.95	59.92	340.01	32.33	123.79	225.36	17.58	100.03	318.29	120.64
95th-Percentile Queue Length [veh/ln]	16.25	16.62	5.97	4.31	19.65	2.33	8.60	13.94	1.27	7.20	18.58	8.43
95th-Percentile Queue Length [ft/ln]	406.17	415.48	149.32	107.85	491.21	58.19	215.03	348.45	31.64	180.05	464.59	210.71

Movement, Approach, & Intersection Results

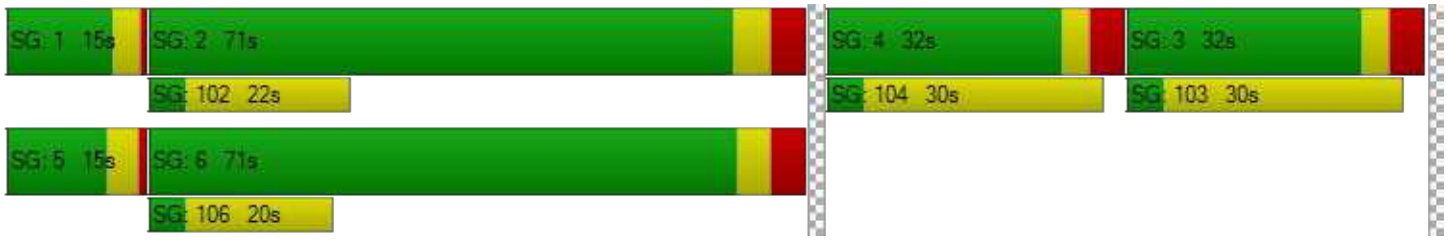
d_M, Delay for Movement [s/veh]	63.99	63.69	53.31	51.63	71.31	50.70	81.76	22.26	16.70	80.95	26.07	21.42
Movement LOS	E	E	D	D	E	D	F	C	B	F	C	C
d_A, Approach Delay [s/veh]	62.32			66.21			28.53			28.85		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	39.43											
Intersection LOS	D											
Intersection V/C	0.727											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	67.22	67.22
l_p,int, Pedestrian LOS Score for Intersectio	2.495	2.319	2.925	2.930
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	340	851	845
d_b, Bicycle Delay [s]	52.15	52.07	24.83	25.12
l_b,int, Bicycle LOS Score for Intersection	2.667	2.291	2.457	2.758
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	97	285	59	94	352	61	108	863	148	124	895	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	285	59	94	352	61	108	863	148	124	895	98
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	77	16	25	95	16	29	232	40	33	241	26
Total Analysis Volume [veh/h]	104	306	63	101	378	66	116	928	159	133	962	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	19			38			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	130.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	28	35	0	28	35	0	12	67	0	20	75	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	40	40	10	35	35	8	69	69	13	74	74
g / C, Green / Cycle	0.10	0.27	0.27	0.07	0.23	0.23	0.05	0.46	0.46	0.09	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.04	0.06	0.20	0.04	0.07	0.26	0.10	0.07	0.27	0.07
s, saturation flow rate [veh/h]	1781	1870	1545	1781	1870	1513	1781	3560	1589	1781	3560	1543
c, Capacity [veh/h]	186	498	411	125	434	351	97	1642	733	156	1761	763
d1, Uniform Delay [s]	63.97	48.38	42.14	68.83	55.56	46.25	68.34	11.23	9.86	65.37	16.61	13.56
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	1.24	0.17	11.33	8.32	0.26	109.38	1.42	0.68	11.97	1.22	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.61	0.15	0.81	0.87	0.19	1.20	0.57	0.22	0.85	0.55	0.14
d, Delay for Lane Group [s/veh]	66.56	49.62	42.31	80.17	63.88	46.51	177.72	12.65	10.54	77.34	17.83	13.94
Lane Group LOS	E	D	D	F	E	D	F	B	B	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.96	10.38	1.85	4.26	14.92	2.05	6.53	4.71	1.53	5.40	8.08	1.43
50th-Percentile Queue Length [ft/ln]	99.09	259.62	46.27	106.60	373.04	51.20	163.30	117.79	38.35	135.07	201.90	35.64
95th-Percentile Queue Length [veh/ln]	7.13	15.67	3.33	7.65	21.26	3.69	11.28	8.27	2.76	9.21	12.74	2.57
95th-Percentile Queue Length [ft/ln]	178.37	391.74	83.29	191.26	531.42	92.17	281.89	206.79	69.03	230.37	318.42	64.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.56	49.62	42.31	80.17	63.88	46.51	177.72	12.65	10.54	77.34	17.83	13.94
Movement LOS	E	D	D	F	E	D	F	B	B	E	B	B
d_A, Approach Delay [s/veh]	52.37			64.79			28.29			24.09		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	35.96											
Intersection LOS	D											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.28	67.28	67.28	67.28
l_p,int, Pedestrian LOS Score for Intersectio	2.375	2.389	2.857	2.852
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	365	791	898
d_b, Bicycle Delay [s]	50.65	51.14	27.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.340	2.459	2.552	2.550
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	8.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	25	14	143	57	26	45	0	1000	77	0	1079	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	14	143	57	26	45	0	1000	77	0	1079	65
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	1.0000	0.9130	0.9130	1.0000	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	39	16	7	12	0	274	21	0	295	18
Total Analysis Volume [veh/h]	27	15	157	62	28	49	0	1095	84	0	1182	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			8			7			0		
v_di, Inbound Pedestrian Volume crossing m	0			7			8			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			36			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	143.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	37	0	0	37	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	20	20	20	13	13	104	104	104	104
g / C, Green / Cycle	0.13	0.13	0.13	0.09	0.09	0.69	0.69	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.10	0.03	0.05	0.31	0.05	0.33	0.05
s, saturation flow rate [veh/h]	1781	1870	1533	1781	1560	3560	1539	3560	1554
c, Capacity [veh/h]	235	247	202	156	136	2466	1066	2466	1077
d1, Uniform Delay [s]	57.43	57.02	62.76	64.75	65.74	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.10	6.30	1.64	3.63	0.58	0.14	0.67	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.06	0.78	0.40	0.56	0.44	0.08	0.48	0.07
d, Delay for Lane Group [s/veh]	57.64	57.12	69.06	66.39	69.37	0.58	0.14	0.67	0.12
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.93	0.51	6.16	2.34	3.00	0.20	0.04	0.23	0.04
50th-Percentile Queue Length [ft/ln]	23.18	12.77	153.92	58.62	75.11	4.98	1.07	5.73	0.88
95th-Percentile Queue Length [veh/ln]	1.67	0.92	10.23	4.22	5.41	0.36	0.08	0.41	0.06
95th-Percentile Queue Length [ft/ln]	41.73	22.98	255.65	105.51	135.20	8.96	1.92	10.32	1.59

Movement, Approach, & Intersection Results

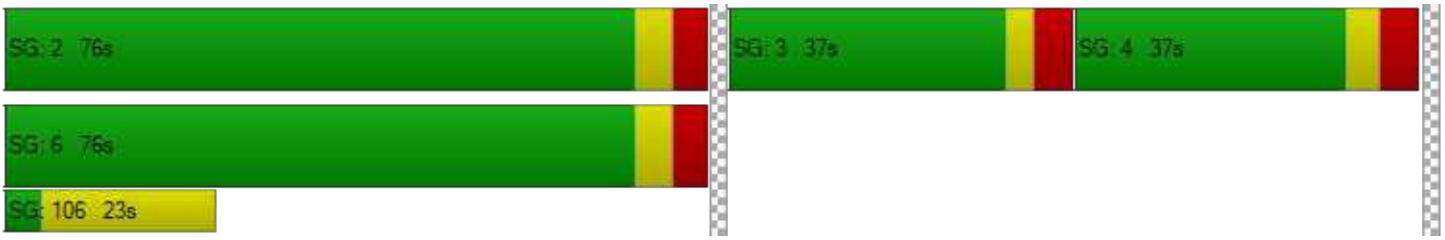
d_M, Delay for Movement [s/veh]	57.64	57.12	69.06	66.39	69.37	69.37	0.00	0.58	0.14	0.00	0.67	0.12
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	66.61			68.04			0.55			0.64		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	8.72											
Intersection LOS	A											
Intersection V/C	0.497											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.031	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	392	912	912
d_b, Bicycle Delay [s]	48.36	49.39	22.23	22.26
l_b,int, Bicycle LOS Score for Intersection	1.888	1.789	2.532	2.593
Bicycle LOS	A	A	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	56.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	438	69	355	270	44	176	1025	403	163	1023	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	438	69	355	270	44	176	1025	403	163	1023	18
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	123	19	100	76	12	50	289	113	46	288	5
Total Analysis Volume [veh/h]	72	493	78	400	304	50	198	1154	454	184	1152	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			10			0			10		
v_di, Inbound Pedestrian Volume crossing m	0			10			0			10		
v_co, Outbound Pedestrian Volume crossing	12			0			0			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			0			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	41			11			1			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		No			Yes		No	Yes		No	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	60	60	24	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.40	0.40	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.12	0.16	0.03	0.11	0.32	0.29	0.10	0.32	0.01
s, saturation flow rate [veh/h]	1850	1756	3459	1870	1503	1781	3560	1570	1781	3560	1512
c, Capacity [veh/h]	296	281	665	360	289	202	1425	628	285	1591	676
d1, Uniform Delay [s]	63.01	63.01	55.33	58.43	50.52	63.51	30.30	28.52	51.24	14.03	10.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	82.22	92.63	3.99	20.96	1.30	58.40	5.08	7.07	10.77	2.90	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	1.13	0.60	0.84	0.17	0.98	0.81	0.72	0.65	0.72	0.03
d, Delay for Lane Group [s/veh]	145.23	155.64	59.31	79.39	51.81	121.91	35.39	35.59	62.01	16.93	10.74
Lane Group LOS	F	F	E	E	D	F	D	D	E	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.08	17.98	7.32	13.26	1.69	10.54	16.56	12.46	6.49	7.49	0.20
50th-Percentile Queue Length [ft/ln]	452.01	449.49	183.08	331.46	42.29	263.39	414.07	311.50	162.32	187.30	5.02
95th-Percentile Queue Length [veh/ln]	26.28	26.43	11.76	19.23	3.05	15.86	23.24	18.25	10.67	11.98	0.36
95th-Percentile Queue Length [ft/ln]	656.93	660.78	294.03	480.75	76.13	396.47	580.93	456.23	266.79	299.53	9.04

Movement, Approach, & Intersection Results

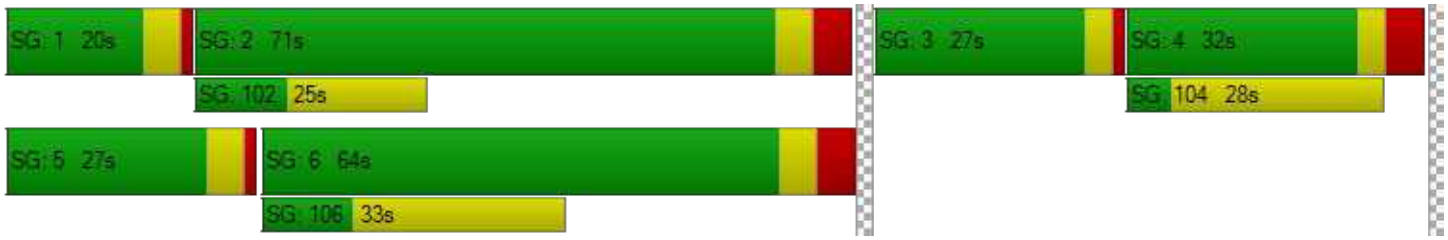
d_M, Delay for Movement [s/veh]	145.23	150.28	155.64	59.31	79.39	51.81	121.91	35.39	35.59	62.01	16.93	10.74
Movement LOS	F	F	F	E	E	D	F	D	D	E	B	B
d_A, Approach Delay [s/veh]	150.37			66.91			44.92			22.96		
Approach LOS	F			E			D			C		
d_I, Intersection Delay [s/veh]	56.90											
Intersection LOS	E											
Intersection V/C	0.799											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.341	2.782	0.000	2.977
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.90	52.38	29.54	25.35
l_b,int, Bicycle LOS Score for Intersection	2.090	2.804	3.050	2.678
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	23	64	6	7	65	40	1306	20	89	1421	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	23	64	6	7	65	40	1306	20	89	1421	35
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9500	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	6	17	2	2	17	11	350	5	24	380	9
Total Analysis Volume [veh/h]	69	25	69	6	7	70	43	1398	21	95	1521	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	6			4			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			4			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			0			3			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	40	40	40	40	40	40	24	86	86	24	86	86
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	22	22	22	8	108	108	10	110	110
g / C, Green / Cycle	0.15	0.15	0.15	0.06	0.72	0.72	0.07	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.04	0.02	0.26	0.26	0.05	0.29	0.29
s, saturation flow rate [veh/h]	1436	1338	1583	1781	3560	1853	1781	3560	1843
c, Capacity [veh/h]	244	231	232	99	2567	1336	116	2601	1346
d1, Uniform Delay [s]	61.87	55.04	57.17	67.17	0.85	0.85	67.59	0.55	0.55
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	0.10	0.73	2.97	0.40	0.77	12.86	0.45	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.06	0.30	0.43	0.36	0.36	0.82	0.39	0.40
d, Delay for Lane Group [s/veh]	65.00	55.14	57.90	70.14	1.25	1.62	80.45	1.00	1.42
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.27	0.44	2.49	1.65	0.72	0.88	3.92	0.58	0.75
50th-Percentile Queue Length [ft/ln]	156.76	11.08	62.22	41.16	17.93	22.11	98.09	14.39	18.87
95th-Percentile Queue Length [veh/ln]	10.38	0.80	4.48	2.96	1.29	1.59	7.06	1.04	1.36
95th-Percentile Queue Length [ft/ln]	259.43	19.94	112.00	74.09	32.27	39.80	176.57	25.91	33.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.00	65.00	65.00	55.14	55.14	57.90	70.14	1.38	1.62	80.45	1.13	1.42
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	65.00			57.47			3.40			5.70		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	8.85											
Intersection LOS	A											
Intersection V/C	0.460											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	64.41
l_p,int, Pedestrian LOS Score for Intersectio	1.842	2.003	0.000	3.235
Crosswalk LOS	A	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1052	1052
d_b, Bicycle Delay [s]	45.22	44.86	16.88	16.89
l_b,int, Bicycle LOS Score for Intersection	1.829	1.697	2.364	2.469
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	166	2	244	0	2	0	285	1178	4	2	1306	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	2	244	0	2	0	285	1178	4	2	1306	98
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	1	64	0	1	0	75	310	1	1	343	26
Total Analysis Volume [veh/h]	175	2	257	0	2	0	300	1239	4	2	1373	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			0			3			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	10	0	0	10	0	4	10	0	4	15	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	40	40	0	0	40	0	35	75	0	35	75	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	30	30	30	30	27	110	110	0	83	83
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.18	0.73	0.73	0.00	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.17	0.00	0.00	0.17	0.23	0.23	0.00	0.28	0.28
s, saturation flow rate [veh/h]	1415	1563	1120	1870	1781	3560	1866	1781	3560	1794
c, Capacity [veh/h]	311	310	79	371	322	2603	1365	6	1971	993
d1, Uniform Delay [s]	56.78	57.82	0.00	48.29	56.02	0.52	0.52	74.52	11.00	11.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	5.92	0.00	0.01	11.83	0.32	0.60	28.33	0.90	1.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.84	0.00	0.01	0.93	0.31	0.31	0.33	0.50	0.50
d, Delay for Lane Group [s/veh]	58.38	63.73	0.00	48.30	67.86	0.84	1.13	102.85	11.90	12.82
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.34	9.99	0.00	0.06	11.81	0.42	0.55	0.12	5.54	5.87
50th-Percentile Queue Length [ft/ln]	158.53	249.74	0.00	1.54	295.23	10.61	13.84	3.12	138.60	146.74
95th-Percentile Queue Length [veh/ln]	10.47	15.17	0.00	0.11	17.45	0.76	1.00	0.22	9.41	9.84
95th-Percentile Queue Length [ft/ln]	261.77	379.32	0.00	2.78	436.13	19.11	24.91	5.62	235.13	246.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.38	63.73	63.73	0.00	48.30	48.30	67.86	0.94	1.13	102.85	12.17	12.82
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	61.57			48.30			13.95			12.33		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	19.26											
Intersection LOS	B											
Intersection V/C	0.654											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.970	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	905	905
d_b, Bicycle Delay [s]	44.98	44.87	22.51	22.53
l_b,int, Bicycle LOS Score for Intersection	2.276	1.563	2.408	2.373
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.406

Intersection Setup

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	18	1	38	3	0	3	97	1480	3	27	1504	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	6.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	1	38	3	0	3	97	1480	3	27	1504	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	10	1	0	1	26	389	1	7	396	6
Total Analysis Volume [veh/h]	19	1	40	3	0	3	102	1558	3	28	1583	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			5			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	35	0	0	35	0	15	105	0	15	105	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	10	122	122	3	114	114
g / C, Green / Cycle	0.09	0.09	0.09	0.07	0.81	0.81	0.02	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.00	0.06	0.29	0.29	0.02	0.30	0.30
s, saturation flow rate [veh/h]	1514	1589	1362	1781	3560	1868	1781	3560	1855
c, Capacity [veh/h]	182	142	157	123	2885	1513	37	2712	1413
d1, Uniform Delay [s]	62.97	63.84	62.46	67.24	0.00	0.00	72.60	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	1.08	0.10	13.12	0.34	0.65	27.36	0.42	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.28	0.04	0.83	0.35	0.35	0.76	0.39	0.39
d, Delay for Lane Group [s/veh]	63.24	64.92	62.56	80.36	0.34	0.65	99.96	0.42	0.81
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.73	1.49	0.22	4.21	0.14	0.27	1.34	0.16	0.32
50th-Percentile Queue Length [ft/ln]	18.20	37.28	5.49	105.22	3.43	6.86	33.59	3.97	7.95
95th-Percentile Queue Length [veh/ln]	1.31	2.68	0.40	7.57	0.25	0.49	2.42	0.29	0.57
95th-Percentile Queue Length [ft/ln]	32.76	67.10	9.88	189.33	6.18	12.35	60.47	7.15	14.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.24	63.24	64.92	62.56	62.56	62.56	80.36	0.45	0.65	99.96	0.55	0.81
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.36			62.56			5.35			2.26		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.00											
Intersection LOS	A											
Intersection V/C	0.406											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.016	1.750	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	373	373	1307	1307
d_b, Bicycle Delay [s]	49.62	49.62	9.04	9.04
l_b,int, Bicycle LOS Score for Intersection	1.659	1.570	2.474	2.458
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	378	447	77	286	224	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.93	1.92	2.00	1.94	1.90	1.74
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	447	77	286	224	256
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	120	21	77	60	69
Total Analysis Volume [veh/h]	405	479	82	306	240	274
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		12	
v_di, Inbound Pedestrian Volume crossing m	0		0		11	
v_co, Outbound Pedestrian Volume crossing	11		11		10	
v_ci, Inbound Pedestrian Volume crossing mi	12		10		11	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		91		16	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	14	14	2	20	10	10
g / C, Green / Cycle	0.36	0.36	0.06	0.53	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.22	0.32	0.05	0.16	0.13	0.19
s, saturation flow rate [veh/h]	1871	1514	1781	1871	1782	1462
c, Capacity [veh/h]	678	549	109	992	458	376
d1, Uniform Delay [s]	10.00	11.21	17.79	5.09	12.29	12.84
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	1.75	3.84	0.06	0.35	1.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.87	0.75	0.31	0.52	0.73
d, Delay for Lane Group [s/veh]	10.31	12.96	21.63	5.15	12.63	13.87
Lane Group LOS	B	B	C	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.20	3.11	0.75	0.88	1.51	1.85
50th-Percentile Queue Length [ft/ln]	55.10	77.78	18.72	22.01	37.64	46.28
95th-Percentile Queue Length [veh/ln]	3.97	5.60	1.35	1.58	2.71	3.33
95th-Percentile Queue Length [ft/ln]	99.18	140.01	33.69	39.61	67.75	83.30

Movement, Approach, & Intersection Results

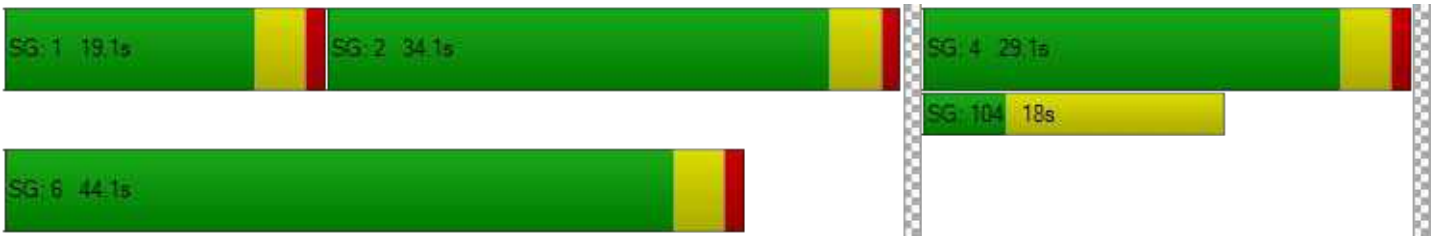
d_M, Delay for Movement [s/veh]	10.31	12.96	21.63	5.15	12.63	13.87
Movement LOS	B	B	C	A	B	B
d_A, Approach Delay [s/veh]	11.75		8.63		13.29	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.52					
Intersection LOS	B					
Intersection V/C	0.614					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	11.25	2.03
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.184	2.117
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1563	2084	1302
d_b, Bicycle Delay [s]	0.92	0.04	2.36
l_b,int, Bicycle LOS Score for Intersection	3.018	2.200	1.560
Bicycle LOS	C	B	A

Sequence

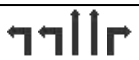
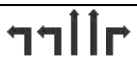
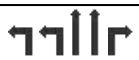
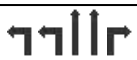
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Santa Cruz Ave/Sand Hill Rd

Control Type:	Signalized	Delay (sec / veh):	47.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	276	958	195	260	546	53	156	756	403	178	545	202
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	276	958	195	260	546	53	156	756	403	178	545	202
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	245	50	67	140	14	40	194	103	46	140	52
Total Analysis Volume [veh/h]	283	982	200	266	559	54	160	775	413	182	558	207
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			3			1		
v_di, Inbound Pedestrian Volume crossing m	1			3			4			2		
v_co, Outbound Pedestrian Volume crossing	2			3			3			4		
v_ci, Inbound Pedestrian Volume crossing mi	3			4			2			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	33			33			29			49		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.6	4.3	4.3	3.6	4.3	4.3	3.6	4.1	4.1	3.6	4.1	4.1
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	19	47	47	20	48	48	13	53	53	20	60	60
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	4.3	4.3	2.6	4.3	4.3	2.6	4.1	4.1	2.6	4.1	4.1
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	6.30	6.30	4.60	6.30	6.30	4.60	6.10	6.10	4.60	6.10	6.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	4.30	4.30	2.60	4.30	4.30	2.60	4.10	4.10	2.60	4.10	4.10
g_i, Effective Green Time [s]	13	55	55	13	55	55	8	40	40	10	42	42
g / C, Green / Cycle	0.10	0.40	0.40	0.09	0.39	0.39	0.06	0.29	0.29	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.28	0.13	0.08	0.16	0.04	0.05	0.22	0.27	0.05	0.16	0.14
s, saturation flow rate [veh/h]	3459	3560	1535	3459	3560	1533	3459	3560	1524	3459	3560	1508
c, Capacity [veh/h]	333	1409	608	319	1395	600	208	1026	439	241	1060	449
d1, Uniform Delay [s]	62.32	35.32	29.26	62.53	30.75	26.83	64.86	45.38	47.96	63.99	40.98	39.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.09	2.88	1.45	5.68	0.86	0.30	5.84	1.16	21.06	4.76	0.41	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.70	0.33	0.83	0.40	0.09	0.77	0.76	0.94	0.75	0.53	0.46
d, Delay for Lane Group [s/veh]	68.41	38.20	30.71	68.21	31.61	27.13	70.71	46.53	69.02	68.75	41.39	40.48
Lane Group LOS	E	D	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	14.39	4.91	4.89	6.98	1.20	2.98	12.33	16.28	3.34	8.07	5.85
50th-Percentile Queue Length [ft/ln]	130.55	359.81	122.77	122.32	174.52	29.96	74.39	308.33	406.92	83.44	201.66	146.29
95th-Percentile Queue Length [veh/ln]	8.97	20.61	8.55	8.52	11.31	2.16	5.36	18.09	22.89	6.01	12.72	9.82
95th-Percentile Queue Length [ft/ln]	224.24	515.35	213.63	213.02	282.84	53.92	133.90	452.32	572.34	150.20	318.10	245.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.41	38.20	30.71	68.21	31.61	27.13	70.71	46.53	69.02	68.75	41.39	40.48
Movement LOS	E	D	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	43.01			42.41			56.29			46.45		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	47.46											
Intersection LOS	D											
Intersection V/C	0.728											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.46	59.46	59.46	59.46
l_p,int, Pedestrian LOS Score for Intersectio	3.004	3.096	3.000	2.950
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	595	670	770
d_b, Bicycle Delay [s]	35.83	35.11	31.43	27.16
l_b,int, Bicycle LOS Score for Intersection	2.768	2.285	2.672	2.341
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	166.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.426

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	265	15	216	0	7	33	5	0	10	282	321
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	265	15	216	0	7	33	5	0	10	282	321
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	74	4	60	0	2	9	1	0	3	78	89
Total Analysis Volume [veh/h]	0	294	17	240	0	8	37	6	0	11	313	357
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	551	378	681
Degree of Utilization, x	1.14	0.13	1.43

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	19.11	0.46	33.13
95th-Percentile Queue Length [ft]	477.63	11.57	828.30
Approach Delay [s/veh]	110.12	14.00	224.75
Approach LOS	F	B	F
Intersection Delay [s/veh]	166.74		
Intersection LOS	F		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	324	215	3	0	5	68	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	215	3	0	5	68	3	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	60	1	0	1	19	1	0
Total Analysis Volume [veh/h]	360	239	3	0	6	76	3	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	602	377
Degree of Utilization, x	1.33	0.23

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	27.08	0.85
95th-Percentile Queue Length [ft]	676.95	21.35
Approach Delay [s/veh]	187.27	15.32
Approach LOS	F	C
Intersection Delay [s/veh]	166.74	
Intersection LOS	F	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	91.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.125

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	131	367	157	51	474	58	349	100	101	64	58	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	367	157	51	474	58	349	100	101	64	58	93
Peak Hour Factor	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	108	46	15	139	17	102	29	30	19	17	27
Total Analysis Volume [veh/h]	154	430	184	60	556	68	409	117	118	75	68	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	27			0			0			27		
v_di, Inbound Pedestrian Volume crossing m	27			0			0			27		
v_co, Outbound Pedestrian Volume crossing	6			0			6			0		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			6			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	26			2			7			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	32	39	29	30	30	30
g / C, Green / Cycle	0.50	0.41	0.50	0.37	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.15	0.35	0.06	0.34	0.67	0.07	0.11
s, saturation flow rate [veh/h]	1011	1741	932	1830	956	1145	1584
c, Capacity [veh/h]	382	717	344	674	442	92	607
d1, Uniform Delay [s]	15.83	20.90	14.47	23.68	30.09	16.60	16.76
k, delay calibration	0.23	0.41	0.11	0.40	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	10.56	0.24	17.32	218.60	15.48	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.86	0.17	0.93	1.46	0.81	0.29
d, Delay for Lane Group [s/veh]	17.30	31.46	14.71	41.00	248.68	32.08	17.02
Lane Group LOS	B	C	B	D	F	C	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.46	11.27	0.50	13.29	35.22	1.29	2.18
50th-Percentile Queue Length [ft/ln]	36.43	281.66	12.56	332.24	880.61	32.34	54.53
95th-Percentile Queue Length [veh/ln]	2.62	16.77	0.90	19.27	55.37	2.33	3.93
95th-Percentile Queue Length [ft/ln]	65.58	419.28	22.60	481.70	1384.34	58.20	98.15

Movement, Approach, & Intersection Results

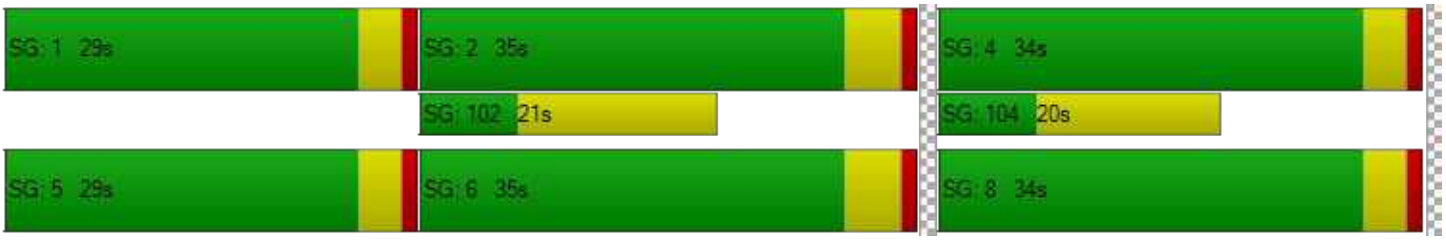
d_M, Delay for Movement [s/veh]	17.30	31.46	31.46	14.71	41.00	41.00	248.68	248.68	248.68	32.08	17.02	17.02
Movement LOS	B	C	C	B	D	D	F	F	F	C	B	B
d_A, Approach Delay [s/veh]	28.62			38.70			248.68			21.50		
Approach LOS	C			D			F			C		
d_I, Intersection Delay [s/veh]	91.15											
Intersection LOS	F											
Intersection V/C	1.125											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.86	0.00	28.86	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.213	0.000	2.133	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	768	768	768	768
d_b, Bicycle Delay [s]	15.04	14.86	14.89	14.85
l_b,int, Bicycle LOS Score for Intersection	2.827	2.688	2.622	1.975
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		35.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	485	545	65	421	955	555
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	485	545	65	421	955	555
Peak Hour Factor	0.9660	0.9660	0.9660	0.9660	0.9660	0.9660
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	141	17	109	247	144
Total Analysis Volume [veh/h]	502	564	67	436	989	575
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	43		21		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	5	5	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	55	25	55	60	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	33	33	33	21	58	72	72
g / C, Green / Cycle	0.24	0.24	0.24	0.15	0.41	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.19	0.04	0.28	0.28	0.37
s, saturation flow rate [veh/h]	1781	1830	1870	1781	1575	3560	1560
c, Capacity [veh/h]	420	432	441	267	653	1841	807
d1, Uniform Delay [s]	50.73	50.73	50.72	52.55	33.00	22.59	25.56
k, delay calibration	0.12	0.12	0.12	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.57	4.45	4.35	0.49	5.35	1.13	5.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.82	0.82	0.25	0.67	0.54	0.71
d, Delay for Lane Group [s/veh]	55.30	55.17	55.07	53.04	38.35	23.72	30.88
Lane Group LOS	E	E	E	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.88	12.19	12.44	2.12	12.77	10.85	15.09
50th-Percentile Queue Length [ft/ln]	296.93	304.65	310.93	53.04	319.32	271.29	377.25
95th-Percentile Queue Length [veh/ln]	17.53	17.91	18.22	3.82	18.63	16.25	21.46
95th-Percentile Queue Length [ft/ln]	438.23	447.77	455.53	95.47	465.85	406.35	536.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.26	55.11	53.04	38.35	23.72	30.88
Movement LOS	E	E	D	D	C	C
d_A, Approach Delay [s/veh]	55.18		40.31		26.35	
Approach LOS	E		D		C	
d_I, Intersection Delay [s/veh]	38.40					
Intersection LOS	D					
Intersection V/C	0.799					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	299	787
d_b, Bicycle Delay [s]	29.29	51.19	25.93
l_b,int, Bicycle LOS Score for Intersection	2.439	1.560	2.850
Bicycle LOS	B	A	C

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.944

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Base Volume Input [veh/h]	1781	0	0	932	734	954
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1781	0	0	932	734	954
Peak Hour Factor	0.9640	1.0000	1.0000	0.9640	0.9640	0.9640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	462	0	0	242	190	247
Total Analysis Volume [veh/h]	1848	0	0	967	761	990
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	60	0	0	60	60	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	51	51	34	34
g / C, Green / Cycle	0.57	0.57	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.52	0.27	0.22	0.35
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2018	2018	1325	1078
d1, Uniform Delay [s]	17.58	11.61	21.99	26.46
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.99	0.82	0.15	1.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.48	0.57	0.92
d, Delay for Lane Group [s/veh]	25.57	12.42	22.14	27.91
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	17.49	5.50	6.16	9.81
50th-Percentile Queue Length [ft/ln]	437.34	137.49	153.89	245.28
95th-Percentile Queue Length [veh/ln]	24.35	9.35	10.22	14.95
95th-Percentile Queue Length [ft/ln]	608.83	233.64	255.61	373.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.57	0.00	0.00	12.42	22.14	27.91
Movement LOS	C			B	C	C
d_A, Approach Delay [s/veh]	25.57		12.42		25.40	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.72					
Intersection LOS	C					
Intersection V/C	0.944					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.49	34.71
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.060	2.557
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	564	1239
d_b, Bicycle Delay [s]	23.25	23.22	6.52
l_b,int, Bicycle LOS Score for Intersection	3.084	2.357	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	211	23	209	145	13	18	211	430	21	190	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	211	23	209	145	13	18	211	430	21	190	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	56	6	55	38	3	5	56	114	6	50	3
Total Analysis Volume [veh/h]	12	223	24	221	153	14	19	223	455	22	201	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	408	438	420	450	479	532	444
Degree of Utilization, x	0.03	0.56	0.53	0.37	0.51	0.86	0.53

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.09	3.41	2.98	1.69	2.80	9.12	3.02
95th-Percentile Queue Length [ft]	2.27	85.16	74.50	42.26	70.04	227.98	75.57
Approach Delay [s/veh]	20.66		18.24		30.62		19.86
Approach LOS	C		C		D		C
Intersection Delay [s/veh]	24.34						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.157

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1070	646	0	1417	550	0	0	0	922	0	360
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1070	646	0	1417	550	0	0	0	922	0	360
Peak Hour Factor	1.0000	0.9190	0.9190	1.0000	0.9190	0.9190	1.0000	1.0000	1.0000	0.9190	1.0000	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	291	176	0	385	150	0	0	0	251	0	98
Total Analysis Volume [veh/h]	0	1164	703	0	1542	598	0	0	0	1003	0	392
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	23	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	53	53	53		19	19
g / C, Green / Cycle	0.66	0.66	0.66		0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.23	0.30	0.64		0.29	0.14
s, saturation flow rate [veh/h]	5094	5094	941		3459	2813
c, Capacity [veh/h]	3370	3370	623		824	671
d1, Uniform Delay [s]	5.93	6.56	12.55		30.43	26.93
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.28	0.45	27.56		100.13	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.46	0.96		1.22	0.58
d, Delay for Lane Group [s/veh]	6.21	7.01	40.11		130.55	27.74
Lane Group LOS	A	A	D		F	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.41	3.55	12.35		19.06	3.27
50th-Percentile Queue Length [ft/ln]	60.31	88.68	308.67		476.52	81.83
95th-Percentile Queue Length [veh/ln]	4.34	6.39	18.11		29.04	5.89
95th-Percentile Queue Length [ft/ln]	108.55	159.63	452.74		726.04	147.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.21	0.00	0.00	7.01	40.11	0.00	0.00	0.00	130.55	0.00	27.74
Movement LOS		A			A	D				F		C
d_A, Approach Delay [s/veh]	4.00			16.26			0.00			101.66		
Approach LOS	A			B			A			F		
d_I, Intersection Delay [s/veh]	38.58											
Intersection LOS	D											
Intersection V/C	1.157											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	31.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.021	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1326	1326	0	475
d_b, Bicycle Delay [s]	4.56	4.54	39.97	23.23
l_b,int, Bicycle LOS Score for Intersection	2.200	2.737	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

Intersection Setup

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Base Volume Input [veh/h]	0	1458	493	0	1553	534	0	0	0	425	0	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1458	493	0	1553	534	0	0	0	425	0	606
Peak Hour Factor	1.0000	0.9580	0.9580	1.0000	0.9580	0.9580	1.0000	1.0000	1.0000	0.9580	1.0000	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	380	129	0	405	139	0	0	0	111	0	158
Total Analysis Volume [veh/h]	0	1522	515	0	1621	557	0	0	0	444	0	633
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	50	0	0	58	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	50	0	0	50	0	0	0	0	20	0	10
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	46	46	56		16	26
g / C, Green / Cycle	0.58	0.58	0.70		0.20	0.32
(v / s)_i Volume / Saturation Flow Rate	0.30	0.32	0.57		0.13	0.22
s, saturation flow rate [veh/h]	5094	1589	2828		3459	2813
c, Capacity [veh/h]	2936	916	1980		692	911
d1, Uniform Delay [s]	10.24	10.63	8.44		29.38	23.62
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.66	2.49	3.92		1.00	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.56	0.82		0.64	0.70
d, Delay for Lane Group [s/veh]	10.90	13.12	12.36		30.39	24.59
Lane Group LOS	B	B	B		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.91	5.62	5.51		3.89	5.08
50th-Percentile Queue Length [ft/ln]	122.87	140.52	137.71		97.27	126.97
95th-Percentile Queue Length [veh/ln]	8.55	9.51	9.36		7.00	8.77
95th-Percentile Queue Length [ft/ln]	213.77	237.72	233.93		175.08	219.37

Movement, Approach, & Intersection Results

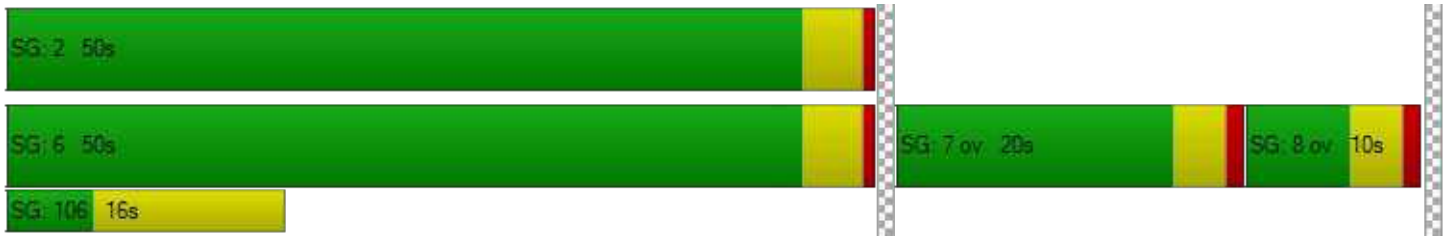
d_M, Delay for Movement [s/veh]	0.00	10.90	13.12	0.00	12.36	0.00	0.00	0.00	0.00	30.39	0.00	24.59
Movement LOS		B	B		B					C		C
d_A, Approach Delay [s/veh]	11.46			9.29			0.00			26.98		
Approach LOS	B			A			A			C		
d_I, Intersection Delay [s/veh]	14.25											
Intersection LOS	B											
Intersection V/C	0.815											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.52	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1400	0	400
d_b, Bicycle Delay [s]	7.23	3.62	40.01	25.61
l_b,int, Bicycle LOS Score for Intersection	2.680	2.451	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	10	303	36	173	160	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	303	36	173	160	5
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	88	10	50	47	1
Total Analysis Volume [veh/h]	12	352	42	201	186	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	616	674	781	646
Degree of Utilization, x	0.02	0.52	0.31	0.30

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	3.05	1.33	1.24
95th-Percentile Queue Length [ft]	1.49	76.24	33.21	31.06
Approach Delay [s/veh]	13.57		9.68	10.92
Approach LOS	B		A	B
Intersection Delay [s/veh]	11.75			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	489	153	26	421	10	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	489	153	26	421	10	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	38	7	105	3	1
Total Analysis Volume [veh/h]	489	153	26	421	10	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.04	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.85	0.00	20.23	12.49
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.04	0.15	0.15
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.10	1.10	3.63	3.63
d_A, Approach Delay [s/veh]	0.00		0.51		18.45	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.43					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	489	357	0	421	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	489	357	0	421	0	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	89	0	105	0	1
Total Analysis Volume [veh/h]	489	357	0	421	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	9.55	0.00	20.14	12.90
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.49	0.49
d_A, Approach Delay [s/veh]	0.00		0.00		12.90	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	116.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.290

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	146	16	298	19	50	314	6	9	165	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	146	16	298	19	50	314	6	9	165	57
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	50	5	102	7	17	108	2	3	57	20
Total Analysis Volume [veh/h]	41	188	200	22	408	26	68	430	8	12	226	78
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	429	456	506	381
Degree of Utilization, x	1.06	1.16	1.29	0.83

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	14.32	17.52	22.62	7.57
95th-Percentile Queue Length [ft]	357.90	437.93	565.46	189.31
Approach Delay [s/veh]	92.22	125.13	175.45	44.92
Approach LOS	F	F	F	E
Intersection Delay [s/veh]	116.93			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	46.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	232	194	109	243	229	132
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	194	109	243	229	132
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	62	35	78	73	42
Total Analysis Volume [veh/h]	297	249	140	312	294	169
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	562	524	529
Degree of Utilization, x	0.97	0.86	0.88

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	13.30	9.28	9.71
95th-Percentile Queue Length [ft]	332.49	232.02	242.75
Approach Delay [s/veh]	55.96	39.18	40.81
Approach LOS	F	E	E
Intersection Delay [s/veh]	45.97		
Intersection LOS	E		

Intersection Level Of Service Report
Intersection 292: Ravenswood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	34.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.174

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	3	476	36	13	464	1	19	0	44	21	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	476	36	13	464	1	19	0	44	21	0	33
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	140	11	4	136	0	6	0	13	6	0	10
Total Analysis Volume [veh/h]	4	560	42	15	546	1	22	0	52	25	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.15	0.00	0.10	0.17	0.00	0.07
d_M, Delay for Movement [s/veh]	8.53	0.00	0.00	8.71	0.00	0.00	33.03	28.05	15.96	34.60	29.14	16.20
Movement LOS	A	A	A	A	A	A	D	D	C	D	D	C
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.03	0.03	0.03	0.96	0.96	0.96	0.95	0.95	0.95
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	0.63	0.63	0.63	23.97	23.97	23.97	23.68	23.68	23.68
d_A, Approach Delay [s/veh]	0.06			0.23			21.03			23.39		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	2.46											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	18	5	52	10	4	14	13	371	3	10	236	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	5	52	10	4	14	13	371	3	10	236	15
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	15	3	1	4	4	104	1	3	66	4
Total Analysis Volume [veh/h]	20	6	58	11	4	16	15	417	3	11	265	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	680	650	782	761
Degree of Utilization, x	0.12	0.05	0.56	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.42	0.15	3.48	1.82
95th-Percentile Queue Length [ft]	10.52	3.75	87.08	45.51
Approach Delay [s/veh]	9.04	8.81	13.22	10.66
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	11.75			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.061

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	24	35	438	14	7	261
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	35	438	14	7	261
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	9	110	4	2	65
Total Analysis Volume [veh/h]	24	35	438	14	7	261
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.06	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	15.16	11.84	0.00	0.00	8.26	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.40	0.40	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	9.99	9.99	0.00	0.00	0.29	0.29
d_A, Approach Delay [s/veh]	13.19		0.00		0.22	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.07					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	2	3	438	1	1	261
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	3	438	1	1	261
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	110	0	0	65
Total Analysis Volume [veh/h]	2	3	438	1	1	261
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	700	855	824
Degree of Utilization, x	0.01	0.51	0.32

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.02	2.99	1.37
95th-Percentile Queue Length [ft]	0.54	74.80	34.33
Approach Delay [s/veh]	8.18	11.56	9.40
Approach LOS	A	B	A
Intersection Delay [s/veh]	10.74		
Intersection LOS	B		

Vistro File:
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Report File: P:\...\BPAM with Imp.pdf

Scenario 21 Near-Term (2027) Plus Project with Improvement AM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	1.025	75.3	E
254	Glenwood Ave and Laurel Street	Signalized	HCM 7th Edition	NWB Thru	0.508	16.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	75.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.025

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	18	851	10	36	1126	46	40	4	15	83	6	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	851	10	36	1126	46	40	4	15	83	6	133
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	220	3	9	291	12	10	1	4	21	2	34
Total Analysis Volume [veh/h]	19	880	10	37	1164	48	41	4	16	86	6	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	149	149	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	3	85	85	18	100	11	11	11	18	40
g / C, Green / Cycle	0.02	0.57	0.57	0.12	0.67	0.07	0.07	0.07	0.12	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.27	0.27	0.04	0.79	0.02	0.02	0.01	0.10	0.17
s, saturation flow rate [veh/h]	937	1422	1862	937	1533	937	1364	1319	940	827
c, Capacity [veh/h]	17	808	1058	112	1026	69	101	98	111	221
d1, Uniform Delay [s]	73.36	19.11	19.11	60.34	24.69	65.33	65.32	64.70	64.36	47.99
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	145.24	0.94	0.72	1.72	91.79	2.01	1.37	0.78	14.14	8.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.14	0.48	0.48	0.33	1.18	0.27	0.26	0.16	0.83	0.62
d, Delay for Lane Group [s/veh]	218.60	20.04	19.83	62.06	116.48	67.34	66.70	65.48	78.49	56.16
Lane Group LOS	F	C	B	E	F	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	8.26	10.76	1.36	60.40	0.72	1.03	0.61	3.89	5.09
50th-Percentile Queue Length [ft/ln]	32.98	206.40	268.92	33.97	1509.93	18.04	25.68	15.24	97.37	127.15
95th-Percentile Queue Length [veh/ln]	2.37	12.97	16.14	2.45	84.02	1.30	1.85	1.10	7.01	8.78
95th-Percentile Queue Length [ft/ln]	59.36	324.20	403.39	61.15	2100.51	32.48	46.22	27.44	175.26	219.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	218.60	19.92	19.83	62.06	116.48	116.48	66.99	66.70	65.48	78.49	78.49	56.16
Movement LOS	F	B	B	E	F	F	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	24.07			114.87			66.57			65.10		
Approach LOS	C			F			E			E		
d_I, Intersection Delay [s/veh]	75.29											
Intersection LOS	E											
Intersection V/C	1.025											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.05	64.05	64.05	64.05
l_p,int, Pedestrian LOS Score for Intersectio	2.597	2.790	2.166	2.040
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	268	268	402	402
d_b, Bicycle Delay [s]	56.07	56.10	47.68	47.68
l_b,int, Bicycle LOS Score for Intersection	2.310	3.620	1.660	1.939
Bicycle LOS	B	D	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	127	16	251	18	53	211	6	9	180	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	127	16	251	18	53	211	6	9	180	26
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	43	5	86	6	18	72	2	3	62	9
Total Analysis Volume [veh/h]	41	188	174	22	344	25	73	289	8	12	247	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	33	0	0	33	0	0	29	0	0	29	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	37	0	0	37	0	0	33	0	0	33	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	29	29
g / C, Green / Cycle	0.47	0.47	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.27	0.24	0.24	0.18
s, saturation flow rate [veh/h]	1496	1630	1548	1631
c, Capacity [veh/h]	762	823	703	729
d1, Uniform Delay [s]	13.17	12.78	15.41	14.63
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.62	1.96	2.81	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.48	0.53	0.40
d, Delay for Lane Group [s/veh]	15.79	14.74	18.22	16.29
Lane Group LOS	B	B	B	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.57	4.23	4.59	3.39
50th-Percentile Queue Length [ft/ln]	114.22	105.69	114.67	84.84
95th-Percentile Queue Length [veh/ln]	8.07	7.60	8.10	6.11
95th-Percentile Queue Length [ft/ln]	201.85	189.99	202.48	152.72

Movement, Approach, & Intersection Results

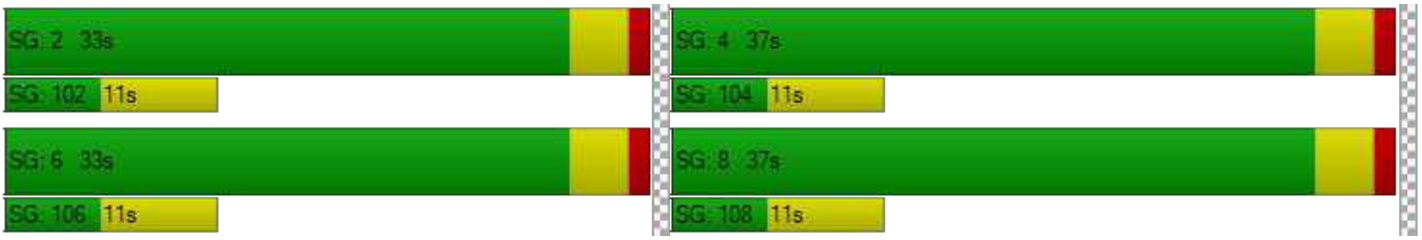
d_M, Delay for Movement [s/veh]	15.79	15.79	15.79	14.74	14.74	14.74	18.22	18.22	18.22	16.29	16.29	16.29
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	15.79			14.74			18.22			16.29		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.23											
Intersection LOS	B											
Intersection V/C	0.508											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
l_p,int, Pedestrian LOS Score for Intersectio	2.225	2.013	2.131	2.079
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	943	943	829	829
d_b, Bicycle Delay [s]	9.78	9.78	12.01	12.01
l_b,int, Bicycle LOS Score for Intersection	2.225	2.205	2.170	2.046
Bicycle LOS	B	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Vistro File:
P:\...\Parkline_Vistro_AllScenarios_AM_2023.11.22.vistro
Report File: P:\...\CPAM with Imp.pdf

Scenario 22 Cumulative (2040) Plus Project with Improvements AM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.877	55.8	E
115	Orange Ave/Santa Cruz Ave	Signalized	HCM 6th Edition	SWB Left	0.481	22.1	C
254	Glenwood Ave and Laurel Street	Signalized	HCM 6th Edition	NEB Right	0.612	25.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	55.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	19	784	8	36	791	46	41	10	16	78	6	344
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	784	8	36	791	46	41	10	16	78	6	344
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	203	2	9	204	12	11	3	4	20	2	89
Total Analysis Volume [veh/h]	20	811	8	37	818	48	42	10	17	81	6	356
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	152	152	152	152	152	152	152	152	152	152
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	3	66	66	27	90	12	12	12	30	62
g / C, Green / Cycle	0.02	0.43	0.43	0.18	0.59	0.08	0.08	0.08	0.20	0.41
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.25	0.04	0.57	0.02	0.02	0.01	0.09	0.43
s, saturation flow rate [veh/h]	937	1422	1863	937	1527	937	1376	1324	940	829
c, Capacity [veh/h]	17	612	802	168	903	71	104	100	185	336
d1, Uniform Delay [s]	74.83	32.95	32.96	53.47	29.43	66.67	66.65	65.86	54.21	45.01
k, delay calibration	0.11	0.23	0.23	0.11	0.42	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	147.80	1.85	1.42	0.65	19.08	2.33	1.57	0.79	1.85	65.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.58	0.58	0.22	0.96	0.30	0.30	0.17	0.47	1.06
d, Delay for Lane Group [s/veh]	222.64	34.80	34.38	54.12	48.51	69.00	68.22	66.66	56.06	110.95
Lane Group LOS	F	C	C	D	D	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.40	10.45	13.60	1.27	34.08	0.85	1.21	0.66	3.10	18.77
50th-Percentile Queue Length [ft/ln]	34.98	261.13	340.02	31.66	852.01	21.30	30.37	16.51	77.48	469.18
95th-Percentile Queue Length [veh/ln]	2.52	15.75	19.65	2.28	43.65	1.53	2.19	1.19	5.58	26.94
95th-Percentile Queue Length [ft/ln]	62.96	393.63	491.23	56.98	1091.36	38.35	54.67	29.72	139.47	673.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	222.64	34.56	34.38	54.12	48.51	48.51	68.63	68.22	66.66	56.06	56.06	110.95
Movement LOS	F	C	C	D	D	D	E	E	E	E	E	F
d_A, Approach Delay [s/veh]	39.04			48.74			68.07			100.17		
Approach LOS	D			D			E			F		
d_I, Intersection Delay [s/veh]	55.83											
Intersection LOS	E											
Intersection V/C	0.877											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.59	65.59	65.59	65.59
l_p,int, Pedestrian LOS Score for Intersectio	2.513	2.764	2.168	2.100
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	262	262	394	394
d_b, Bicycle Delay [s]	57.59	57.62	49.17	49.17
l_b,int, Bicycle LOS Score for Intersection	2.252	3.050	1.673	2.291
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	211	23	209	145	13	18	211	430	21	190	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	211	23	209	145	13	18	211	430	21	190	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	56	6	55	38	3	5	56	114	6	50	3
Total Analysis Volume [veh/h]	12	223	24	221	153	14	19	223	455	22	201	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	45	0	0	45	0	0	57	0	0	57	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	49	0	0	49	0	0	61	0	0	61	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	6	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45	45	57	57	57
g / C, Green / Cycle	0.41	0.41	0.41	0.41	0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.01	0.13	0.20	0.09	0.13	0.29	0.14
s, saturation flow rate [veh/h]	1218	1838	1133	1843	1817	1589	1703
c, Capacity [veh/h]	470	752	404	754	977	824	918
d1, Uniform Delay [s]	24.79	22.19	33.56	21.12	14.67	17.89	14.62
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	1.17	5.23	0.68	0.61	2.66	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.33	0.55	0.22	0.25	0.55	0.26
d, Delay for Lane Group [s/veh]	24.89	23.35	38.79	21.80	15.27	20.55	15.30
Lane Group LOS	C	C	D	C	B	C	B
Critical Lane Group	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.23	4.57	5.68	2.93	3.46	8.16	3.36
50th-Percentile Queue Length [ft/ln]	5.64	114.31	141.89	73.20	86.38	203.89	83.94
95th-Percentile Queue Length [veh/ln]	0.41	8.08	9.58	5.27	6.22	12.84	6.04
95th-Percentile Queue Length [ft/ln]	10.15	201.98	239.56	131.77	155.48	320.98	151.09

Movement, Approach, & Intersection Results

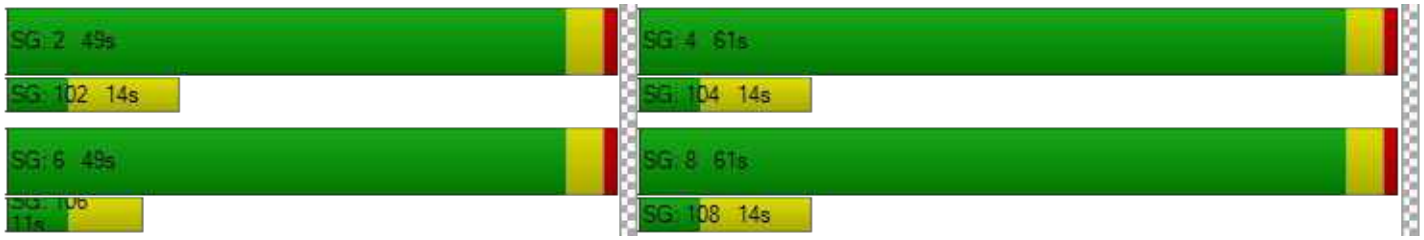
d_M, Delay for Movement [s/veh]	24.89	23.35	23.35	38.79	21.80	21.80	15.27	15.27	20.55	15.30	15.30	15.30
Movement LOS	C	C	C	D	C	C	B	B	C	B	B	B
d_A, Approach Delay [s/veh]	23.42			31.48			18.72			15.30		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	22.12											
Intersection LOS	C											
Intersection V/C	0.481											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersectio	2.122	2.336	2.637	1.979
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	818	818	1036	1036
d_b, Bicycle Delay [s]	19.20	19.20	12.77	12.77
l_b,int, Bicycle LOS Score for Intersection	1.987	2.200	2.710	1.947
Bicycle LOS	A	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	146	16	298	19	50	314	6	9	165	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	146	16	298	19	50	314	6	9	165	57
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	50	5	102	7	17	108	2	3	57	20
Total Analysis Volume [veh/h]	41	188	200	22	408	26	68	430	8	12	226	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	48	0	0	48	0	0	54	0	0	54	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	52	0	0	52	0	0	58	0	0	58	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	54	54
g / C, Green / Cycle	0.44	0.44	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.29	0.28	0.32	0.20
s, saturation flow rate [veh/h]	1480	1637	1570	1591
c, Capacity [veh/h]	682	749	808	815
d1, Uniform Delay [s]	24.19	24.06	20.53	17.73
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.37	3.67	3.65	1.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.61	0.63	0.39
d, Delay for Lane Group [s/veh]	28.56	27.73	24.18	19.12
Lane Group LOS	C	C	C	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.36	9.77	10.09	5.30
50th-Percentile Queue Length [ft/ln]	234.02	244.13	252.20	132.38
95th-Percentile Queue Length [veh/ln]	14.38	14.89	15.30	9.07
95th-Percentile Queue Length [ft/ln]	359.46	372.25	382.43	226.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.56	28.56	28.56	27.73	27.73	27.73	24.18	24.18	24.18	19.12	19.12	19.12
Movement LOS	C	C	C	C	C	C	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	28.56			27.73			24.18			19.12		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	25.29											
Intersection LOS	C											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersectio	2.302	2.067	2.222	2.181
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	873	873	982	982
d_b, Bicycle Delay [s]	17.47	17.47	14.25	14.25
l_b,int, Bicycle LOS Score for Intersection	2.267	2.312	2.395	2.081
Bicycle LOS	B	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_PM_2023.11.17.vistro
Report File: P:\...\EPM.pdf

Scenario 16 Existing PM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Left	0.739	22.4	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	NEB Left	0.602	23.9	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	SB Left	0.616	30.8	C
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.418	17.6	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.484	31.4	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	SEB Left	0.567	32.1	C
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	0.076	37.3	E
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	SWB Left	0.882	86.8	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	EB Thru	0.880	116.4	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	NB Right	1.072	72.3	E
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.054	42.3	D
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Right	1.438	154.8	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.060	145.1	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	NEB Left	0.735	9.9	A
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.522	13.1	B
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.698	12.7	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.663	11.5	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NWB Right	0.636	52.9	D
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	NEB Thru	0.560	61.0	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.535	13.3	B
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	4.173	30.0	C
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	NWB Left	0.646	29.9	C
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	SWB Left	0.612	23.9	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	SWB Right	0.521	7.2	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.720	32.7	C
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.499	7.2	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.623	18.2	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.445	5.7	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.514	9.5	A
39	Sand Hill Rd/Santa Cruz Ave	Signalized	HCM 7th Edition	NWB Left	0.666	41.0	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	NB Right	0.546	12.0	B
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Left	0.574	13.4	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	NEB Thru	0.689	38.6	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 7th Edition	NWB Left	0.827	18.8	B
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	SWB Left	0.732	19.1	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEBL2	0.636	19.8	B
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.626	100.0	F

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.373	9.7	A
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NEB Thru	0.006	0.0	A
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NEB Thru	0.006	0.0	A
254	Laurel Street and Glenwood Ave	All-way stop	HCM 7th Edition	NEB Thru	0.307	9.6	A
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.297	9.3	A
292	Ravesnwood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SWB Left	0.039	39.6	E
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.297	8.8	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	NWB Thru	0.003	0.0	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.332	8.8	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	962	909	279	1428	504
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	962	909	279	1428	504
Peak Hour Factor	1.0000	0.9720	0.9720	1.0000	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	247	234	70	367	130
Total Analysis Volume [veh/h]	0	990	935	279	1469	519
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	100	100	0	100	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	40	40	0	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	5	0
Pedestrian Clearance [s]	0	12	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	51	48	45	45
g / C, Green / Cycle	0.51	0.48	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.25	0.26	0.42	0.33
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2021	1724	1556	715
d1, Uniform Delay [s]	16.29	18.06	26.33	22.49
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	1.23	1.48	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.54	0.94	0.73
d, Delay for Lane Group [s/veh]	17.14	19.29	27.81	23.02
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.23	7.41	16.17	9.67
50th-Percentile Queue Length [ft/ln]	180.86	185.16	404.23	241.79
95th-Percentile Queue Length [veh/ln]	11.65	11.87	22.76	14.77
95th-Percentile Queue Length [ft/ln]	291.14	296.74	569.09	369.30

Movement, Approach, & Intersection Results

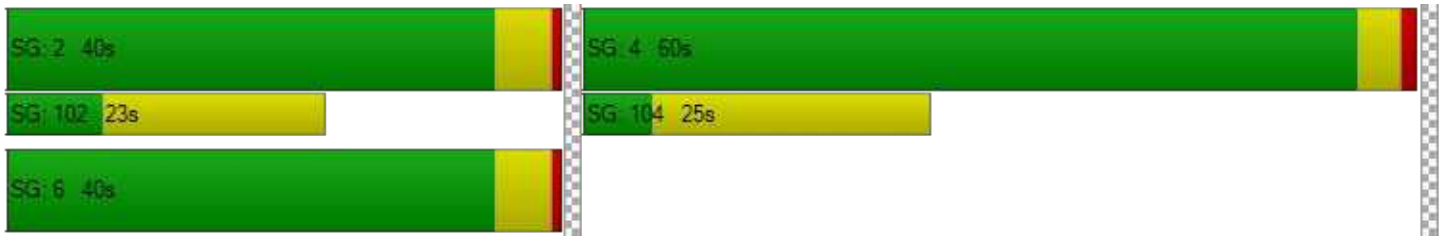
d_M, Delay for Movement [s/veh]	0.00	17.14	19.29	0.00	27.81	23.02
Movement LOS		B	B		C	C
d_A, Approach Delay [s/veh]	17.14		19.29		26.56	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	22.44					
Intersection LOS	C					
Intersection V/C	0.739					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.43	0.00	39.63
l_p,int, Pedestrian LOS Score for Intersectio	2.833	0.000	2.591
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1117
d_b, Bicycle Delay [s]	20.95	20.90	9.74
l_b,int, Bicycle LOS Score for Intersection	2.376	2.331	1.560
Bicycle LOS	B	B	A

Sequence

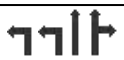
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	32	1148	2	73	991	222	15	8	257	261	5	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	1148	2	73	991	222	15	8	257	261	5	2
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	298	1	19	257	58	4	2	67	68	1	1
Total Analysis Volume [veh/h]	33	1192	2	76	1029	231	16	8	267	271	5	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	57	0	20	62	0	0	36	0	0	32	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	145	145	145	145	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	5	96	96	7	97	97	18	18	16	16
g / C, Green / Cycle	0.04	0.66	0.66	0.05	0.67	0.67	0.13	0.13	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.02	0.35	0.35	0.01	0.09	0.08	0.08
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1738	1810	2813	1781	1781
c, Capacity [veh/h]	67	2349	1232	165	1252	1164	226	351	200	200
d1, Uniform Delay [s]	68.28	10.75	10.75	67.09	12.08	12.19	56.17	61.23	61.84	61.84
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.07	0.38	0.73	0.74	1.53	1.71	0.15	2.54	3.20	3.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.33	0.33	0.46	0.52	0.53	0.11	0.76	0.69	0.69
d, Delay for Lane Group [s/veh]	72.35	11.13	11.48	67.83	13.61	13.90	56.32	63.77	65.05	65.05
Lane Group LOS	E	B	B	E	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.27	5.44	5.83	1.39	10.62	10.19	0.80	4.92	5.16	5.16
50th-Percentile Queue Length [ft/ln]	31.84	136.11	145.82	34.63	265.54	254.65	20.03	123.12	129.04	129.04
95th-Percentile Queue Length [veh/ln]	2.29	9.27	9.79	2.49	15.97	15.42	1.44	8.56	8.89	8.89
95th-Percentile Queue Length [ft/ln]	57.31	231.78	244.84	62.33	399.17	385.50	36.05	214.11	222.19	222.19

Movement, Approach, & Intersection Results

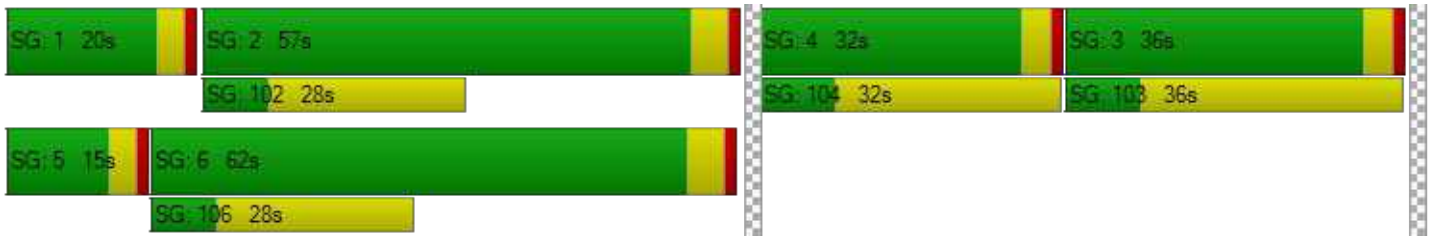
d_M, Delay for Movement [s/veh]	72.35	11.25	11.48	67.83	13.72	13.90	56.32	56.32	63.77	65.05	65.05	65.05
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	12.89			16.83			63.16			65.05		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	23.87											
Intersection LOS	C											
Intersection V/C	0.602											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.93	60.93	61.85	61.85
l_p,int, Pedestrian LOS Score for Intersectio	2.906	3.114	2.383	2.112
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	718	787	439	384
d_b, Bicycle Delay [s]	29.77	26.66	44.13	47.30
l_b,int, Bicycle LOS Score for Intersection	2.234	2.662	2.040	2.018
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	133	700	32	16	690	359	429	9	101	69	35	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	700	32	16	690	359	429	9	101	69	35	45
Peak Hour Factor	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	191	9	4	188	98	117	2	28	19	10	12
Total Analysis Volume [veh/h]	145	763	35	17	752	391	468	10	110	75	38	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	50	50	50	50	50	50	50	50	50	0	50	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	45	45	22	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	15	92	92	4	80	80	24	24	24	12	12
g / C, Green / Cycle	0.11	0.65	0.65	0.03	0.57	0.57	0.17	0.17	0.17	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.08	0.22	0.22	0.01	0.32	0.33	0.13	0.13	0.07	0.04	0.05
s, saturation flow rate [veh/h]	1781	1870	1837	1781	1870	1624	1781	1784	1556	1781	1679
c, Capacity [veh/h]	193	1222	1200	51	1073	932	306	306	267	159	150
d1, Uniform Delay [s]	60.62	10.73	10.74	66.73	18.83	19.06	55.53	55.53	51.66	60.69	61.31
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.20	0.72	0.74	1.39	2.15	2.61	3.26	3.25	0.75	1.62	2.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.33	0.33	0.33	0.56	0.58	0.78	0.78	0.41	0.47	0.58
d, Delay for Lane Group [s/veh]	62.82	11.45	11.48	68.12	20.98	21.67	58.78	58.78	52.41	62.31	63.95
Lane Group LOS	E	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.10	5.54	5.47	0.62	12.66	11.50	8.43	8.45	3.55	2.64	3.12
50th-Percentile Queue Length [ft/ln]	127.61	138.61	136.68	15.38	316.48	287.57	210.85	211.23	88.80	65.97	77.97
95th-Percentile Queue Length [veh/ln]	8.81	9.41	9.30	1.11	18.49	17.07	13.20	13.22	6.39	4.75	5.61
95th-Percentile Queue Length [ft/ln]	220.24	235.15	232.54	27.68	462.36	426.63	329.92	330.41	159.84	118.75	140.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.82	11.46	11.48	68.12	21.12	21.67	58.78	58.78	52.41	62.31	63.95	63.95
Movement LOS	E	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	19.36			21.99			57.59			63.19		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	30.80											
Intersection LOS	C											
Intersection V/C	0.616											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.47	59.47	59.47	59.47
l_p,int, Pedestrian LOS Score for Intersectio	2.830	3.012	2.388	2.022
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	457	468
d_b, Bicycle Delay [s]	35.48	35.50	41.76	41.10
l_b,int, Bicycle LOS Score for Intersection	2.338	2.517	2.530	1.827
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	3	770	54	123	686	39	62	14	5	43	4	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	770	54	123	686	39	62	14	5	43	4	100
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	198	14	32	177	10	16	4	1	11	1	26
Total Analysis Volume [veh/h]	3	793	56	127	706	40	64	14	5	44	4	103
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing m	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	4.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	105	70	105	35	105	70	45	45	45	0	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	0	7	0	0	0	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	0	17	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	105	105	15	123	123	22	22
g / C, Green / Cycle	0.70	0.70	0.10	0.82	0.82	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.07	0.20	0.20	0.08	0.09
s, saturation flow rate [veh/h]	1865	1655	1781	1870	1829	1057	1627
c, Capacity [veh/h]	1336	1164	174	1535	1502	199	272
d1, Uniform Delay [s]	8.70	8.71	65.66	3.00	3.00	59.62	59.77
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.81	5.71	0.38	0.39	2.95	3.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.34	0.73	0.25	0.25	0.42	0.55
d, Delay for Lane Group [s/veh]	9.38	9.53	71.36	3.38	3.39	62.57	63.52
Lane Group LOS	A	A	E	A	A	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.76	5.17	4.99	2.22	2.18	3.16	5.68
50th-Percentile Queue Length [ft/ln]	143.95	129.32	124.72	55.40	54.51	79.05	142.10
95th-Percentile Queue Length [veh/ln]	9.69	8.90	8.65	3.99	3.92	5.69	9.59
95th-Percentile Queue Length [ft/ln]	242.33	222.57	216.30	99.73	98.12	142.29	239.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.38	9.44	9.53	71.36	3.39	3.39	62.57	62.57	62.57	63.52	63.52	63.52
Movement LOS	A	A	A	E	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	9.45			13.28			62.57			63.52		
Approach LOS	A			B			E			E		
d_I, Intersection Delay [s/veh]	17.57											
Intersection LOS	B											
Intersection V/C	0.418											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	99.9	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	64.37	8.35	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.832	1.714	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	866	1333	538	538
d_b, Bicycle Delay [s]	24.12	8.35	40.18	40.10
l_b,int, Bicycle LOS Score for Intersection	2.263	2.280	1.697	1.809
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	145	481	337	508	318	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	481	337	508	318	81
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	127	89	134	84	21
Total Analysis Volume [veh/h]	153	506	355	535	335	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing m	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lag	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	35	34	34	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	39	38	38	91	53	0
Vehicle Extension [s]	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	6.1	0.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	Yes	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	4.50	8.10	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.50	6.10	0.00
g_i, Effective Green Time [s]	35	68	29	85	58
g / C, Green / Cycle	0.27	0.52	0.22	0.65	0.45
(v / s)_i Volume / Saturation Flow Rate	0.09	0.32	0.20	0.29	0.23
s, saturation flow rate [veh/h]	1781	1575	1781	1870	1789
c, Capacity [veh/h]	479	796	392	1221	796
d1, Uniform Delay [s]	37.99	23.37	49.36	10.96	26.17
k, delay calibration	0.04	0.50	0.28	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	3.85	17.36	1.14	2.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.64	0.90	0.44	0.53
d, Delay for Lane Group [s/veh]	38.13	27.23	66.71	12.10	28.67
Lane Group LOS	D	C	E	B	C
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.95	11.98	13.00	7.45	9.84
50th-Percentile Queue Length [ft/ln]	98.84	299.62	324.97	186.16	246.12
95th-Percentile Queue Length [veh/ln]	7.12	17.66	18.91	11.92	14.99
95th-Percentile Queue Length [ft/ln]	177.92	441.56	472.79	298.04	374.77

Movement, Approach, & Intersection Results

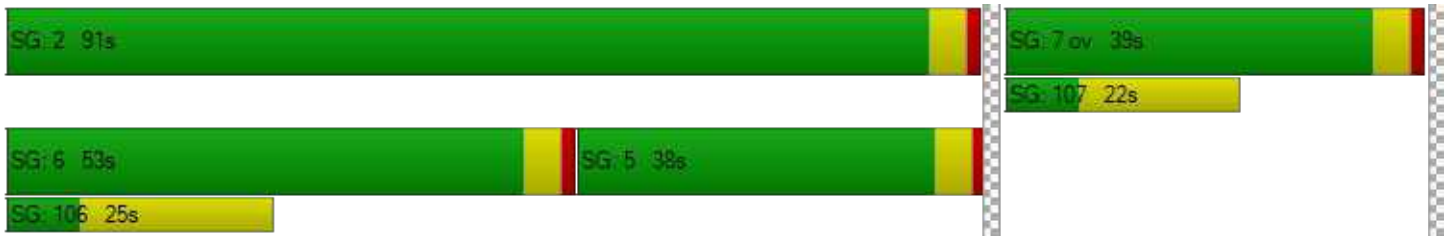
d_M, Delay for Movement [s/veh]	38.13	27.23	66.71	12.10	28.67	28.67
Movement LOS	D	C	E	B	C	C
d_A, Approach Delay [s/veh]	29.76		33.89		28.67	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	31.39					
Intersection LOS	C					
Intersection V/C	0.484					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	54.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.315	2.641	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	531	1331	746
d_b, Bicycle Delay [s]	35.28	7.38	25.67
l_b,int, Bicycle LOS Score for Intersection	1.560	3.028	2.253
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	16	17	18	65	0	254	3	566	74	341	442	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	17	18	65	0	254	3	566	74	341	442	3
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	5	5	17	0	68	1	151	20	91	118	1
Total Analysis Volume [veh/h]	17	18	19	69	0	270	3	602	79	363	470	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing m	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	35	35	35	50	35	50	10	35	35	10	50	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	53	38	53	82	38	82	10	53	38	39	82	0
Vehicle Extension [s]	3.0	3.0	3.0	2.5	3.0	2.5	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	6.1	0.0	6.1	0.0	0.0	0.0	0.5	6.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		Yes	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	8.10	8.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	6.10	6.10
g_i, Effective Green Time [s]	27	27	27	27	3	66	66	30	88	88
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.02	0.51	0.51	0.23	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.06	0.18	0.00	0.17	0.05	0.20	0.13	0.13
s, saturation flow rate [veh/h]	1108	1682	1135	1533	1781	3560	1532	1781	1870	1865
c, Capacity [veh/h]	187	349	291	318	42	1820	783	412	1264	1260
d1, Uniform Delay [s]	51.28	41.69	46.63	49.12	62.05	18.69	16.34	48.22	7.82	7.82
k, delay calibration	0.11	0.11	0.11	0.16	0.04	0.50	0.50	0.31	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.13	0.41	9.09	0.27	0.49	0.26	15.57	0.33	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.11	0.24	0.85	0.07	0.33	0.10	0.88	0.19	0.19
d, Delay for Lane Group [s/veh]	51.49	41.83	47.05	58.21	62.32	19.18	16.60	63.79	8.15	8.15
Lane Group LOS	D	D	D	E	E	B	B	E	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.52	1.00	1.99	9.17	0.10	5.39	1.27	13.01	2.44	2.44
50th-Percentile Queue Length [ft/ln]	12.96	25.07	49.75	229.18	2.49	134.86	31.64	325.30	61.12	61.00
95th-Percentile Queue Length [veh/ln]	0.93	1.80	3.58	14.13	0.18	9.20	2.28	18.93	4.40	4.39
95th-Percentile Queue Length [ft/ln]	23.32	45.12	89.55	353.32	4.49	230.09	56.96	473.20	110.02	109.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.49	41.83	41.83	47.05	47.05	58.21	62.32	19.18	16.60	63.79	8.15	8.15
Movement LOS	D	D	D	D	D	E	E	B	B	E	A	A
d_A, Approach Delay [s/veh]	44.87			55.94			19.07			32.31		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	32.12											
Intersection LOS	C											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	54.44	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	1.971	2.217	2.911	2.734
Crosswalk LOS	A	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	516	516	746	1193
d_b, Bicycle Delay [s]	35.89	36.18	25.76	10.66
l_b,int, Bicycle LOS Score for Intersection	1.649	2.119	2.124	2.249
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	37.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.076

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	8	1	11	10	2	23	2	613	8	37	492	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	1	11	10	2	23	2	613	8	37	492	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	3	3	1	6	1	170	2	10	137	0
Total Analysis Volume [veh/h]	9	1	12	11	2	26	2	681	9	41	547	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane	No			No								
Storage Area [veh]	1			1			0			0		
Two-Stage Gap Acceptance	No			No								
Number of Storage Spaces in Median	0			0			0			0		

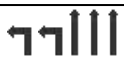
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.01	0.02	0.09	0.01	0.06	0.00	0.01	0.00	0.05	0.01	0.00
d_M, Delay for Movement [s/veh]	37.35	31.22	13.71	36.59	31.69	15.75	8.53	0.00	0.00	9.17	0.00	0.00
Movement LOS	E	D	B	E	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.35	0.35	0.35	0.56	0.56	0.56	0.01	0.00	0.00	0.14	0.00	0.00
95th-Percentile Queue Length [ft/ln]	8.67	8.67	8.67	13.89	13.89	13.89	0.15	0.00	0.00	3.56	0.00	0.00
d_A, Approach Delay [s/veh]	24.18			22.45			0.02			0.64		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	1.34											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	86.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3369	95	333	1116	83	1293
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3369	95	333	1116	83	1293
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	859	24	85	285	21	330
Total Analysis Volume [veh/h]	3438	97	340	1139	85	1319
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	200
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	198.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	175	50	50	50	50	50
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	124	154	30	154	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	0	4	4
Pedestrian Clearance [s]	35	5	0	5	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	293	293	293	293	293	293
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	178	178	48	230	53	105
g / C, Green / Cycle	0.61	0.61	0.17	0.79	0.18	0.36
(v / s)_i Volume / Saturation Flow Rate	0.67	0.06	0.10	0.22	0.02	0.31
s, saturation flow rate [veh/h]	5094	1578	3459	5094	3459	4220
c, Capacity [veh/h]	3095	959	571	4000	626	1468
d1, Uniform Delay [s]	57.44	24.00	113.14	8.70	100.67	90.55
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	51.05	0.05	0.99	0.04	0.10	3.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.11	0.10	0.59	0.28	0.14	0.90
d, Delay for Lane Group [s/veh]	108.48	24.05	114.14	8.74	100.77	94.17
Lane Group LOS	F	C	F	A	F	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	87.99	2.89	12.12	6.59	2.78	32.43
50th-Percentile Queue Length [ft/ln]	2199.68	72.34	303.08	164.80	69.40	810.71
95th-Percentile Queue Length [veh/ln]	113.39	5.21	17.83	10.80	5.00	41.77
95th-Percentile Queue Length [ft/ln]	2834.69	130.22	445.84	270.07	124.92	1044.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	108.48	24.05	114.14	8.74	100.77	94.17
Movement LOS	F	C	F	A	F	F
d_A, Approach Delay [s/veh]	106.17		32.97		94.57	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	86.76					
Intersection LOS	F					
Intersection V/C	0.882					

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	138.54	0.00	137.57
l_p,int, Pedestrian LOS Score for Intersectio	3.864	0.000	3.042
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	785	1011	266
d_b, Bicycle Delay [s]	54.01	35.79	110.02
l_b,int, Bicycle LOS Score for Intersection	3.504	2.373	1.670
Bicycle LOS	D	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	116.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.880

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	41	27	1319	49	118	75	32	1801	159	402	822	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	27	1319	49	118	75	32	1801	159	402	822	6
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	7	343	13	31	20	8	469	41	105	214	2
Total Analysis Volume [veh/h]	43	28	1373	51	123	78	33	1874	165	418	855	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing m	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	4	15	42	4	16	16	68	40	40	68	60	60
g / C, Green / Cycle	0.04	0.14	0.41	0.04	0.15	0.15	0.67	0.39	0.39	0.67	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.33	0.03	0.08	0.05	0.03	0.61	0.17	0.27	0.17	0.00
s, saturation flow rate [veh/h]	1781	1593	4184	1781	1593	1497	1319	3097	966	1563	5094	1589
c, Capacity [veh/h]	63	229	1733	68	246	231	883	1218	380	1022	3004	937
d1, Uniform Delay [s]	48.53	37.98	25.87	48.50	39.47	38.30	6.16	30.90	22.61	17.28	10.30	8.60
k, delay calibration	0.11	0.11	0.22	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.99	0.24	1.70	15.34	1.58	0.86	0.02	243.49	0.78	0.26	0.05	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.12	0.79	0.75	0.50	0.34	0.04	1.54	0.43	0.41	0.28	0.01
d, Delay for Lane Group [s/veh]	60.52	38.22	27.56	63.84	41.04	39.15	6.18	274.39	23.39	17.54	10.35	8.61
Lane Group LOS	E	D	C	E	D	D	A	F	C	B	B	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.27	0.30	9.23	1.59	1.48	1.81	0.11	36.98	2.92	1.60	2.99	0.05
50th-Percentile Queue Length [ft/ln]	31.63	7.62	230.82	39.71	37.09	45.37	2.80	924.62	72.96	39.89	74.77	1.33
95th-Percentile Queue Length [veh/ln]	2.28	0.55	14.22	2.86	2.67	3.27	0.20	59.08	5.25	2.87	5.38	0.10
95th-Percentile Queue Length [ft/ln]	56.93	13.71	355.40	71.47	66.77	81.67	5.04	1476.93	131.33	71.81	134.59	2.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.52	38.22	27.56	63.84	41.04	39.15	6.18	274.39	23.39	17.54	10.35	8.61
Movement LOS	E	D	C	E	D	D	A	F	C	B	B	A
d_A, Approach Delay [s/veh]	28.75			45.07			250.13			12.69		
Approach LOS	C			D			F			B		
d_I, Intersection Delay [s/veh]	116.38											
Intersection LOS	F											
Intersection V/C	0.880											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.25	0.00	42.25	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.341	0.000	3.153	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	739	608	2930	1789
d_b, Bicycle Delay [s]	20.22	24.69	10.99	0.56
l_b,int, Bicycle LOS Score for Intersection	2.751	1.768	2.699	2.263
Bicycle LOS	C	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	72.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.072

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	95	1307	11	24	709	54	62	2	57	15	3	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	1307	11	24	709	54	62	2	57	15	3	20
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	341	3	6	185	14	16	1	15	4	1	5
Total Analysis Volume [veh/h]	99	1366	11	25	741	56	65	2	60	16	3	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			86			11			85		
v_di, Inbound Pedestrian Volume crossing m	11			85			12			86		
v_co, Outbound Pedestrian Volume crossing	13			14			14			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			14			14			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			18			7			15		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	85	79	16	79	85	32	32	32	32	32	32
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	97	92	92	97	90	90	25	25
g / C, Green / Cycle	0.75	0.71	0.71	0.75	0.69	0.69	0.19	0.20
(v / s)_i Volume / Saturation Flow Rate	0.21	0.82	0.82	0.06	0.48	0.49	0.16	0.06
s, saturation flow rate [veh/h]	479	837	834	408	837	809	773	678
c, Capacity [veh/h]	326	593	591	96	577	558	192	159
d1, Uniform Delay [s]	10.92	18.91	18.91	37.82	12.08	12.18	51.19	44.39
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.40	90.70	91.29	6.45	6.90	7.33	6.77	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	1.16	1.16	0.26	0.70	0.71	0.66	0.25
d, Delay for Lane Group [s/veh]	13.32	109.61	110.20	44.28	18.99	19.51	57.96	45.21
Lane Group LOS	B	F	F	D	B	B	E	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.81	29.55	29.55	0.33	7.59	7.52	4.39	1.14
50th-Percentile Queue Length [ft/ln]	20.33	738.72	738.74	8.27	189.77	187.97	109.87	28.61
95th-Percentile Queue Length [veh/ln]	1.46	43.41	43.45	0.60	12.11	12.02	7.83	2.06
95th-Percentile Queue Length [ft/ln]	36.59	1085.28	1086.19	14.89	302.73	300.40	195.82	51.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.32	109.90	110.20	44.28	19.22	19.51	57.96	57.96	57.96	45.21	45.21	45.21
Movement LOS	B	F	F	D	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	103.42			20.01			57.96			45.21		
Approach LOS	F			C			E			D		
d_I, Intersection Delay [s/veh]	72.32											
Intersection LOS	E											
Intersection V/C	1.072											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
l_p,int, Pedestrian LOS Score for Intersectio	3.095	2.934	1.947	2.005
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1155	443	447
d_b, Bicycle Delay [s]	9.21	11.70	39.48	39.48
l_b,int, Bicycle LOS Score for Intersection	2.777	2.238	1.769	1.626
Bicycle LOS	C	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	42.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.054

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	87	1381	801	18	5	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	1381	801	18	5	79
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	357	207	5	1	20
Total Analysis Volume [veh/h]	90	1428	828	19	5	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing m	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	115	95	95	30	30
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	12	122	107	107	16	16
g / C, Green / Cycle	0.08	0.84	0.74	0.74	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.07	0.90	0.51	0.51	0.01	0.09
s, saturation flow rate [veh/h]	1265	1593	837	829	994	893
c, Capacity [veh/h]	103	1345	621	615	107	96
d1, Uniform Delay [s]	65.78	11.29	9.78	9.87	57.98	63.34
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.32	42.87	5.98	6.20	0.07	7.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	1.06	0.68	0.69	0.05	0.85
d, Delay for Lane Group [s/veh]	74.10	54.16	15.76	16.08	58.05	71.16
Lane Group LOS	E	F	B	B	E	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.50	20.71	7.09	7.18	0.17	3.18
50th-Percentile Queue Length [ft/ln]	87.43	517.63	177.31	179.49	4.20	79.57
95th-Percentile Queue Length [veh/ln]	6.30	29.71	11.46	11.57	0.30	5.73
95th-Percentile Queue Length [ft/ln]	157.38	742.81	286.50	289.35	7.56	143.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.10	54.16	15.91	16.08	58.05	71.16
Movement LOS	E	F	B	B	E	E
d_A, Approach Delay [s/veh]	55.34		15.92		70.40	
Approach LOS	E		B		E	
d_I, Intersection Delay [s/veh]	42.26					
Intersection LOS	D					
Intersection V/C	1.054					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.75	63.75	61.89
l_p,int, Pedestrian LOS Score for Intersectio	2.955	2.896	2.027
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1532	1256	373
d_b, Bicycle Delay [s]	3.97	10.06	48.03
l_b,int, Bicycle LOS Score for Intersection	2.812	2.258	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	154.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.438

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1407	199	28	873	248	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1407	199	28	873	248	17
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	357	50	7	221	63	4
Total Analysis Volume [veh/h]	1427	202	28	885	252	17
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	110	110	21	124	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	108	108	16	124	21	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	112	112	5	120	18	18
g / C, Green / Cycle	0.77	0.77	0.03	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.10	0.36	0.04	0.68	0.21	0.21
s, saturation flow rate [veh/h]	1302	561	647	1293	647	637
c, Capacity [veh/h]	1008	434	21	1070	79	78
d1, Uniform Delay [s]	16.38	5.69	70.13	6.83	63.60	63.60
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	192.83	3.55	168.24	7.35	364.68	367.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.42	0.46	1.32	0.83	1.70	1.71
d, Delay for Lane Group [s/veh]	209.21	9.24	238.36	14.18	428.28	431.02
Lane Group LOS	F	A	F	B	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	39.80	2.21	1.77	6.15	10.98	10.87
50th-Percentile Queue Length [ft/ln]	994.99	55.26	44.31	153.76	274.50	271.84
95th-Percentile Queue Length [veh/ln]	64.09	3.98	3.19	10.22	19.22	19.07
95th-Percentile Queue Length [ft/ln]	1602.37	99.46	79.75	255.44	480.49	476.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	209.21	9.24	238.36	14.18	429.55	431.02
Movement LOS	F	A	F	B	F	F
d_A, Approach Delay [s/veh]	184.42		21.06		429.65	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	154.82					
Intersection LOS	F					
Intersection V/C	1.438					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	61.92
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.125
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1434	1655	246
d_b, Bicycle Delay [s]	5.81	2.16	55.85
l_b,int, Bicycle LOS Score for Intersection	2.904	2.313	2.003
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	145.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.060

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	322	1384	416	93	1008	17	44	143	256	201	159	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	322	1384	416	93	1008	17	44	143	256	201	159	55
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	368	111	25	268	5	12	38	68	53	42	15
Total Analysis Volume [veh/h]	343	1472	443	99	1072	18	47	152	272	214	169	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11			20			10			19		
v_di, Inbound Pedestrian Volume crossing m	10			19			11			20		
v_co, Outbound Pedestrian Volume crossing	3			7			7			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			7			7			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	140.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	4
Maximum Green [s]	21	40	40	21	40	40	5	25	25	5	21	5
Amber [s]	3.0	4.4	4.4	3.0	4.0	4.0	3.0	3.6	3.6	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0
Split [s]	31	51	51	14	34	34	14	34	34	51	31	51
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.4	3.4	1.0	3.0	3.0	2.0	2.6	2.6	2.0	1.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.40	5.40	3.00	5.00	5.00	4.00	4.60	4.60	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.40	3.40	1.00	3.00	3.00	2.00	2.60	2.60	2.00	1.00	1.00
g_i, Effective Green Time [s]	28	55	55	11	38	38	8	25	25	39	23	23
g / C, Green / Cycle	0.22	0.42	0.42	0.08	0.30	0.30	0.06	0.19	0.19	0.30	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.27	0.51	0.53	0.11	0.38	0.38	0.04	0.15	0.18	0.06	0.13	0.04
s, saturation flow rate [veh/h]	1265	2530	1177	937	1874	973	1152	984	1513	3346	1329	1456
c, Capacity [veh/h]	272	1070	498	80	555	288	55	190	291	1015	234	257
d1, Uniform Delay [s]	51.01	37.49	37.49	59.47	45.75	45.75	64.99	50.09	51.10	33.68	50.53	45.81
k, delay calibration	0.50	0.50	0.50	0.15	0.50	0.50	0.11	0.08	0.16	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	143.33	101.95	129.27	137.87	144.44	156.52	27.89	5.65	17.49	0.10	4.09	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.26	1.21	1.25	1.24	1.29	1.30	0.85	0.80	0.93	0.21	0.72	0.23
d, Delay for Lane Group [s/veh]	194.34	139.44	166.76	197.34	190.19	202.27	92.88	55.74	68.58	33.78	54.63	45.97
Lane Group LOS	F	F	F	F	F	F	F	E	E	C	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.50	31.38	32.98	5.69	20.10	21.84	2.02	5.02	10.03	2.56	5.47	1.66
50th-Percentile Queue Length [ft/ln]	487.56	784.53	824.42	142.32	502.49	546.03	50.49	125.47	250.85	64.03	136.67	41.44
95th-Percentile Queue Length [veh/ln]	29.97	45.97	49.04	10.25	31.47	33.92	3.64	8.69	15.23	4.61	9.30	2.98
95th-Percentile Queue Length [ft/ln]	749.16	1149.31	1226.01	256.17	786.75	847.93	90.88	217.32	380.73	115.26	232.53	74.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	194.34	142.79	166.76	197.34	194.19	202.27	92.88	55.74	68.58	33.78	54.63	45.97
Movement LOS	F	F	F	F	F	F	F	E	E	C	D	D
d_A, Approach Delay [s/veh]	155.32			194.58			66.86			43.38		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	145.12											
Intersection LOS	F											
Intersection V/C	1.060											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.30	56.30	54.46	56.30
l_p,int, Pedestrian LOS Score for Intersectio	3.322	3.001	2.393	2.656
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	702	446	452	431
d_b, Bicycle Delay [s]	27.39	39.33	39.00	40.13
l_b,int, Bicycle LOS Score for Intersection	2.802	2.214	2.337	2.289
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	39	1263	920	228	292	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1263	920	228	292	54
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	339	247	61	78	14
Total Analysis Volume [veh/h]	42	1355	987	245	313	58
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	13	100	87	87	40	40
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	31	31	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	26	20	20	10	10
g / C, Green / Cycle	0.04	0.57	0.45	0.45	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.02	0.38	0.28	0.16	0.18	0.04
s, saturation flow rate [veh/h]	1781	3560	3560	1550	1781	1566
c, Capacity [veh/h]	66	2014	1607	699	393	345
d1, Uniform Delay [s]	21.52	6.90	9.44	8.07	16.71	14.30
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.72	0.56	0.55	0.43	1.43	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.67	0.61	0.35	0.80	0.17
d, Delay for Lane Group [s/veh]	25.24	7.47	9.99	8.49	18.14	14.38
Lane Group LOS	C	A	A	A	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.46	2.96	2.70	1.17	2.78	0.42
50th-Percentile Queue Length [ft/ln]	11.60	74.00	67.40	29.37	69.50	10.60
95th-Percentile Queue Length [veh/ln]	0.84	5.33	4.85	2.11	5.00	0.76
95th-Percentile Queue Length [ft/ln]	20.88	133.19	121.32	52.86	125.10	19.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.24	7.47	9.99	8.49	18.14	14.38
Movement LOS	C	A	A	A	B	B
d_A, Approach Delay [s/veh]	8.00		9.69		17.55	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	9.88					
Intersection LOS	A					
Intersection V/C	0.735					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	12.92
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.114
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	4184	3609	1585
d_b, Bicycle Delay [s]	27.07	14.65	0.97
l_b,int, Bicycle LOS Score for Intersection	2.712	2.576	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	975	4	46	726	14	37	1	6	29	1	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	975	4	46	726	14	37	1	6	29	1	30
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	260	1	12	193	4	10	0	2	8	0	8
Total Analysis Volume [veh/h]	4	1039	4	49	774	15	39	1	6	31	1	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	58	58	58	58	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	0	30	30	2	32	4	4	4	4	4
g / C, Green / Cycle	0.00	0.52	0.52	0.04	0.55	0.06	0.06	0.06	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.00	0.28	0.28	0.03	0.42	0.01	0.01	0.00	0.02	0.02
s, saturation flow rate [veh/h]	1781	1870	1867	1781	1863	1781	1785	1436	1781	1510
c, Capacity [veh/h]	8	968	967	69	1028	111	111	89	129	109
d1, Uniform Delay [s]	28.91	9.39	9.39	27.67	10.14	25.90	25.90	25.71	25.50	25.61
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	39.50	1.00	1.00	12.82	2.61	0.78	0.77	0.31	0.95	1.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.54	0.54	0.71	0.77	0.18	0.18	0.07	0.24	0.30
d, Delay for Lane Group [s/veh]	68.42	10.39	10.39	40.49	12.75	26.68	26.68	26.02	26.45	27.15
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.14	3.96	3.96	0.89	6.99	0.29	0.29	0.09	0.42	0.46
50th-Percentile Queue Length [ft/ln]	3.57	99.12	99.01	22.29	174.73	7.24	7.24	2.17	10.56	11.54
95th-Percentile Queue Length [veh/ln]	0.26	7.14	7.13	1.61	11.33	0.52	0.52	0.16	0.76	0.83
95th-Percentile Queue Length [ft/ln]	6.43	178.42	178.23	40.13	283.13	13.03	13.03	3.91	19.00	20.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.42	10.39	10.39	40.49	12.75	12.75	26.68	26.68	26.02	26.45	27.15	27.15
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.61			14.37			26.59			26.81		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	13.08											
Intersection LOS	B											
Intersection V/C	0.522											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.06	19.06	19.06	19.06
l_p,int, Pedestrian LOS Score for Intersectio	2.484	2.692	2.112	1.948
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	1034	1034
d_b, Bicycle Delay [s]	12.48	12.52	6.77	6.77
l_b,int, Bicycle LOS Score for Intersection	2.423	2.942	1.636	1.665
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	16	927	5	9	643	103	134	7	31	9	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	927	5	9	643	103	134	7	31	9	8	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	244	1	2	169	27	35	2	8	2	2	2
Total Analysis Volume [veh/h]	17	976	5	9	677	108	141	7	33	9	8	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing m	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	90	90	90	90	90	90	30	30	30	0	30	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	93	93	93	93	19	19
g / C, Green / Cycle	0.77	0.77	0.77	0.77	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.53	0.02	0.43	0.13	0.01
s, saturation flow rate [veh/h]	689	1868	573	1816	1375	1633
c, Capacity [veh/h]	457	1441	345	1401	274	303
d1, Uniform Delay [s]	11.07	6.59	15.45	5.51	48.22	42.85
k, delay calibration	0.50	0.50	0.50	0.50	0.16	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	2.62	0.14	1.62	3.94	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.68	0.03	0.56	0.66	0.08
d, Delay for Lane Group [s/veh]	11.22	9.21	15.59	7.13	52.17	42.96
Lane Group LOS	B	A	B	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.22	11.27	0.14	7.16	5.51	0.63
50th-Percentile Queue Length [ft/ln]	5.48	281.84	3.51	179.07	137.83	15.64
95th-Percentile Queue Length [veh/ln]	0.39	16.78	0.25	11.55	9.36	1.13
95th-Percentile Queue Length [ft/ln]	9.87	419.50	6.32	288.80	234.10	28.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.22	9.21	9.21	15.59	7.13	7.13	52.17	52.17	52.17	42.96	42.96	42.96
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.24			7.23			52.17			42.96		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	12.74											
Intersection LOS	B											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.45	49.45	49.45	49.45
l_p,int, Pedestrian LOS Score for Intersectio	2.432	2.778	1.906	1.760
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1433	432	432
d_b, Bicycle Delay [s]	4.84	4.83	36.92	36.92
l_b,int, Bicycle LOS Score for Intersection	3.206	2.870	1.858	1.599
Bicycle LOS	C	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	808	53	33	632	7	21	33	3	76	41	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	808	53	33	632	7	21	33	3	76	41	115
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	214	14	9	167	2	6	9	1	20	11	30
Total Analysis Volume [veh/h]	3	855	56	35	669	7	22	35	3	80	43	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing m	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	69
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	23	23	23	23	23	47	47	47	0	47	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	48	48	48	48	13	13	13	13
g / C, Green / Cycle	0.69	0.69	0.69	0.69	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.00	0.49	0.06	0.36	0.02	0.02	0.06	0.10
s, saturation flow rate [veh/h]	763	1845	612	1866	1216	1838	1364	1620
c, Capacity [veh/h]	485	1276	335	1290	181	349	294	308
d1, Uniform Delay [s]	8.71	6.49	14.19	5.15	30.87	23.14	27.20	25.23
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	3.43	0.62	1.52	0.30	0.14	0.50	1.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.71	0.10	0.52	0.12	0.11	0.27	0.54
d, Delay for Lane Group [s/veh]	8.74	9.92	14.81	6.68	31.16	23.28	27.69	26.69
Lane Group LOS	A	A	B	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	7.11	0.40	4.02	0.36	0.51	1.22	2.49
50th-Percentile Queue Length [ft/ln]	0.60	177.85	10.08	100.54	8.94	12.80	30.40	62.15
95th-Percentile Queue Length [veh/ln]	0.04	11.49	0.73	7.24	0.64	0.92	2.19	4.47
95th-Percentile Queue Length [ft/ln]	1.09	287.21	18.15	180.98	16.09	23.04	54.72	111.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.74	9.92	9.92	14.81	6.68	6.68	31.16	23.28	23.28	27.69	26.69	26.69
Movement LOS	A	A	A	B	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	9.92			7.08			26.17			27.01		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	11.55											
Intersection LOS	B											
Intersection V/C	0.663											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.39	24.39	24.39	24.39
l_p,int, Pedestrian LOS Score for Intersectio	2.491	2.495	1.960	2.076
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	548	548	1243	1243
d_b, Bicycle Delay [s]	18.34	18.31	4.96	4.96
l_b,int, Bicycle LOS Score for Intersection	3.068	2.733	1.659	1.964
Bicycle LOS	C	B	A	A

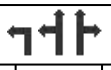
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	52.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	15	265	144	339	87	309	72	301	303	305	298	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	15	265	144	339	87	309	72	301	303	305	298	7
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	69	38	88	23	81	19	79	79	80	78	2
Total Analysis Volume [veh/h]	16	277	150	354	91	323	75	314	316	318	311	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			6			12			6		
v_di, Inbound Pedestrian Volume crossing m	12			6			12			6		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	50			19			4			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	40	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	40	0	34	34	34	0	38	0	29	29	29
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	25	25	25	55	55	55	21	21	21	21	21	21	21
g / C, Green / Cycle	0.18	0.18	0.18	0.39	0.39	0.39	0.15	0.15	0.15	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.11	0.12	0.12	0.21	0.04	0.12	0.12	0.13	0.12	0.12	0.12
s, saturation flow rate [veh/h]	1781	1870	1415	1781	1816	1553	1781	1870	1664	1542	1781	1823	1853
c, Capacity [veh/h]	318	334	253	692	705	603	273	287	256	237	264	270	275
d1, Uniform Delay [s]	47.73	55.52	52.23	29.92	29.90	32.90	52.42	57.15	57.36	57.25	57.54	57.52	57.53
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	5.33	2.23	1.22	1.18	3.38	0.54	4.88	6.13	7.10	5.15	4.98	4.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.83	0.59	0.32	0.32	0.54	0.27	0.79	0.81	0.82	0.79	0.78	0.79
d, Delay for Lane Group [s/veh]	47.79	60.85	54.46	31.14	31.08	36.28	52.96	62.04	63.50	64.35	62.70	62.51	62.46
Lane Group LOS	D	E	D	C	C	D	D	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.48	9.95	4.98	5.56	5.62	9.12	2.39	8.16	7.56	7.16	7.50	7.64	7.77
50th-Percentile Queue Length [ft/ln]	11.89	248.86	124.38	139.01	140.60	228.09	59.87	204.1	189.0	179.0	187.51	191.03	194.34
95th-Percentile Queue Length [veh/ln]	0.86	15.13	8.63	9.43	9.51	14.08	4.31	12.85	12.07	11.55	11.99	12.17	12.35
95th-Percentile Queue Length [ft/ln]	21.40	378.22	215.83	235.69	237.83	351.93	107.7	321.2	301.8	288.7	299.80	304.37	308.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.79	60.85	54.46	31.12	31.08	36.28	52.96	62.44	64.05	62.63	62.48	62.46
Movement LOS	D	E	D	C	C	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	58.21			33.28			62.14			62.55		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	52.88											
Intersection LOS	D											
Intersection V/C	0.636											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.55	58.55	58.55	58.55
l_p,int, Pedestrian LOS Score for Intersectio	2.302	2.756	4.305	2.572
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	510	418	475	347
d_b, Bicycle Delay [s]	39.88	44.22	40.78	48.18
l_b,int, Bicycle LOS Score for Intersection	2.291	2.827	2.966	2.084
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	61.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.560

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	80	530	59	22	410	17	190	100	36	34	78	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	530	59	22	410	17	190	100	36	34	78	24
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	146	16	6	113	5	52	27	10	9	21	7
Total Analysis Volume [veh/h]	88	582	65	24	451	19	209	110	40	37	86	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			20			20			17		
v_di, Inbound Pedestrian Volume crossing m	17			20			20			18		
v_co, Outbound Pedestrian Volume crossing	33			29			34			29		
v_ci, Inbound Pedestrian Volume crossing mi	34			29			33			29		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			5			20			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	30	60	60	30	30	30	35	35	35	35	35	35
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	84	84	10	81	81	40	46	40	46	40	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	4.10	4.10	4.00	4.00	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.10	0.00	2.00	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	75	67	75	63	57	57	36	36
g / C, Green / Cycle	0.42	0.37	0.42	0.35	0.32	0.32	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.08	0.36	0.03	0.25	0.12	0.09	0.02	0.06
s, saturation flow rate [veh/h]	1042	1812	858	1846	1781	1726	1781	1736
c, Capacity [veh/h]	287	679	145	644	561	544	355	346
d1, Uniform Delay [s]	37.54	54.72	42.65	51.19	47.82	46.22	58.90	61.66
k, delay calibration	0.11	0.32	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.60	18.29	0.53	7.12	1.89	1.26	0.59	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.95	0.17	0.73	0.37	0.28	0.10	0.32
d, Delay for Lane Group [s/veh]	38.14	73.01	43.19	58.31	49.71	47.48	59.49	64.13
Lane Group LOS	D	E	D	E	D	D	E	E
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.50	32.00	0.66	19.98	7.72	5.34	1.47	4.71
50th-Percentile Queue Length [ft/ln]	62.39	800.08	16.62	499.58	192.91	133.47	36.75	117.78
95th-Percentile Queue Length [veh/ln]	4.49	41.28	1.20	27.31	12.27	9.13	2.65	8.27
95th-Percentile Queue Length [ft/ln]	112.30	1032.03	29.91	682.86	306.80	228.20	66.15	206.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.14	73.01	73.01	43.19	58.31	58.31	49.71	47.48	47.48	59.49	64.13	64.13
Movement LOS	D	E	E	D	E	E	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	68.83			57.58			48.78			62.97		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	60.98											
Intersection LOS	E											
Intersection V/C	0.560											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	79.33	79.33	79.33	79.33
l_p,int, Pedestrian LOS Score for Intersectio	2.435	2.348	2.160	2.117
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	881	848	460	393
d_b, Bicycle Delay [s]	28.18	29.95	53.90	58.28
l_b,int, Bicycle LOS Score for Intersection	2.772	2.375	2.152	1.805
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	334	62	19	221	33	56	139	15	20	99	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	334	62	19	221	33	56	139	15	20	99	24
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	93	17	5	62	9	16	39	4	6	28	7
Total Analysis Volume [veh/h]	23	373	69	21	247	37	63	155	17	22	110	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			2			9			3		
v_di, Inbound Pedestrian Volume crossing m	9			3			9			2		
v_co, Outbound Pedestrian Volume crossing	7			1			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			12			20			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	38	38	38	38
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	13	13	7	5
g / C, Green / Cycle	0.35	0.35	0.18	0.14
(v / s)_i Volume / Saturation Flow Rate	0.26	0.17	0.13	0.09
s, saturation flow rate [veh/h]	1776	1806	1822	1803
c, Capacity [veh/h]	723	736	327	261
d1, Uniform Delay [s]	10.84	9.66	14.78	15.33
k, delay calibration	0.11	0.11	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.96	0.37	2.98	1.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.41	0.72	0.61
d, Delay for Lane Group [s/veh]	11.80	10.03	17.76	17.03
Lane Group LOS	B	B	B	B
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	2.83	1.62	1.90	1.20
50th-Percentile Queue Length [ft/ln]	70.65	40.39	47.39	29.94
95th-Percentile Queue Length [veh/ln]	5.09	2.91	3.41	2.16
95th-Percentile Queue Length [ft/ln]	127.18	72.70	85.30	53.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.80	11.80	11.80	10.03	10.03	10.03	17.76	17.76	17.76	17.03	17.03	17.03
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	11.80			10.03			17.76			17.03		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.25											
Intersection LOS	B											
Intersection V/C	0.535											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.62	11.09	9.62	9.62
l_p,int, Pedestrian LOS Score for Intersectio	1.989	1.960	1.870	1.878
Crosswalk LOS	A	A	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1577	1577	1577	1577
d_b, Bicycle Delay [s]	0.86	0.86	0.86	0.85
l_b,int, Bicycle LOS Score for Intersection	2.327	2.063	1.947	1.822
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.173

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	16	13	33	115	3	188	29	1420	112	103	949	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.40	0.00	1.50	1.20	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	13	33	115	3	188	29	1420	112	103	949	10
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	9	30	1	49	8	372	29	27	249	3
Total Analysis Volume [veh/h]	17	14	35	121	3	197	30	1488	117	108	995	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			14			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	30	0	0	30	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	27	0	0	27	0	15	58	0	25	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	21	6	63	63	10	67	67
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.05	0.58	0.58	0.09	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.19	0.02	3.54	0.13	0.02	0.42	0.07	0.06	0.18	0.18
s, saturation flow rate [veh/h]	161	1590	35	1574	1810	3578	1568	1788	3583	1871
c, Capacity [veh/h]	82	304	71	301	99	2057	901	159	2181	1139
d1, Uniform Delay [s]	38.28	36.78	54.71	41.04	48.97	8.26	5.70	47.00	4.53	4.53
k, delay calibration	0.20	0.11	0.50	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.17	383.37	2.42	1.69	2.25	0.30	5.07	0.36	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.12	1.74	0.66	0.30	0.72	0.13	0.68	0.30	0.30
d, Delay for Lane Group [s/veh]	43.67	36.95	438.08	43.47	50.67	10.51	6.00	52.06	4.89	5.22
Lane Group LOS	D	D	F	D	D	B	A	D	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.83	0.82	9.57	5.11	0.82	6.09	0.75	3.00	1.69	1.87
50th-Percentile Queue Length [ft/ln]	20.79	20.48	239.35	127.70	20.60	152.37	18.70	74.89	42.18	46.69
95th-Percentile Queue Length [veh/ln]	1.50	1.47	17.23	8.81	1.48	10.14	1.35	5.39	3.04	3.36
95th-Percentile Queue Length [ft/ln]	37.41	36.87	430.82	220.36	37.08	253.60	33.67	134.80	75.93	84.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.67	43.67	36.95	438.08	438.08	43.47	50.67	10.51	6.00	52.06	5.00	5.22
Movement LOS	D	D	D	F	F	D	D	B	A	D	A	A
d_A, Approach Delay [s/veh]	40.10			195.90			10.92			9.57		
Approach LOS	D			F			B			A		
d_I, Intersection Delay [s/veh]	30.00											
Intersection LOS	C											
Intersection V/C	4.173											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.54	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.967	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	382	382	927	1109
d_b, Bicycle Delay [s]	36.05	36.05	15.93	10.92
l_b,int, Bicycle LOS Score for Intersection	1.669	2.089	2.908	2.172
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	29.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	245	134	99	37	180	43	120	1337	48	38	827	119
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	245	134	99	37	180	43	120	1337	48	38	827	119
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	35	26	10	47	11	32	352	13	10	218	31
Total Analysis Volume [veh/h]	258	141	104	39	190	45	126	1409	51	40	871	125
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			1			9			2		
v_di, Inbound Pedestrian Volume crossing m	9			2			8			1		
v_co, Outbound Pedestrian Volume crossing	1			5			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			5			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			5			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	35	0	0	35	0	20	70	0	20	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	27	27	27	22	22	22	13	90	90	7	83	83
g / C, Green / Cycle	0.17	0.17	0.17	0.14	0.14	0.14	0.08	0.56	0.56	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.07	0.02	0.10	0.03	0.07	0.40	0.03	0.02	0.24	0.08
s, saturation flow rate [veh/h]	1781	1842	1511	1781	1870	1547	1781	3560	1541	1781	3560	1545
c, Capacity [veh/h]	296	306	251	244	257	212	148	1992	862	75	1849	802
d1, Uniform Delay [s]	62.55	62.55	59.56	60.93	66.34	61.33	70.26	13.29	9.13	74.03	14.58	12.50
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.54	2.45	1.09	0.30	4.17	0.49	12.86	2.15	0.13	5.76	0.86	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.66	0.41	0.16	0.74	0.21	0.85	0.71	0.06	0.53	0.47	0.16
d, Delay for Lane Group [s/veh]	65.09	65.00	60.65	61.23	70.51	61.82	83.12	15.44	9.26	79.79	15.45	12.91
Lane Group LOS	E	E	E	E	E	E	F	B	A	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.75	8.00	3.88	1.44	7.85	1.68	5.47	11.20	0.52	1.72	6.55	1.64
50th-Percentile Queue Length [ft/ln]	193.64	200.09	97.03	36.11	196.26	42.07	136.78	279.93	13.08	43.03	163.77	41.12
95th-Percentile Queue Length [veh/ln]	12.31	12.64	6.99	2.60	12.45	3.03	9.31	16.69	0.94	3.10	10.75	2.96
95th-Percentile Queue Length [ft/ln]	307.75	316.08	174.65	65.00	311.14	75.73	232.68	417.13	23.55	77.45	268.71	74.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.07	65.00	60.65	61.23	70.51	61.82	83.12	15.44	9.26	79.79	15.45	12.91
Movement LOS	E	E	E	E	E	E	F	B	A	E	B	B
d_A, Approach Delay [s/veh]	64.13			67.76			20.61			17.62		
Approach LOS	E			E			C			B		
d_I, Intersection Delay [s/veh]	29.94											
Intersection LOS	C											
Intersection V/C	0.646											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.23	72.23	72.23	72.23
l_p,int, Pedestrian LOS Score for Intersectio	2.390	2.263	2.975	2.928
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	356	785	780
d_b, Bicycle Delay [s]	54.23	54.20	29.61	29.93
l_b,int, Bicycle LOS Score for Intersection	2.390	2.012	2.868	2.414
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	121	239	107	93	169	51	74	1269	99	78	873	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	239	107	93	169	51	74	1269	99	78	873	50
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	61	28	24	43	13	19	326	25	20	225	13
Total Analysis Volume [veh/h]	124	246	110	96	174	52	76	1306	102	80	898	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	6			0			0			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			0			0			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	10			10			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	20	40	0	20	40	0	21	83	0	18	79	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	26	26	11	21	21	9	97	97	9	97	97
g / C, Green / Cycle	0.10	0.16	0.16	0.07	0.13	0.13	0.05	0.61	0.61	0.06	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.07	0.13	0.07	0.05	0.09	0.03	0.04	0.37	0.07	0.04	0.25	0.03
s, saturation flow rate [veh/h]	1781	1870	1549	1781	1870	1543	1781	3560	1554	1781	3560	1538
c, Capacity [veh/h]	179	309	256	118	245	202	96	2154	940	101	2163	934
d1, Uniform Delay [s]	69.71	64.27	59.97	73.88	66.71	62.55	72.05	0.00	0.00	73.19	7.08	6.08
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.78	4.66	1.14	12.77	3.78	0.66	13.49	1.28	0.23	13.20	0.59	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.80	0.43	0.82	0.71	0.26	0.79	0.61	0.11	0.80	0.42	0.05
d, Delay for Lane Group [s/veh]	74.49	68.94	61.11	86.65	70.48	63.21	85.54	1.28	0.23	86.38	7.67	6.19
Lane Group LOS	E	E	E	F	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	10.17	4.16	4.36	7.16	1.97	3.35	0.38	0.06	3.58	3.76	0.39
50th-Percentile Queue Length [ft/ln]	130.46	254.23	103.91	109.09	179.12	49.32	83.77	9.56	1.52	89.41	93.89	9.79
95th-Percentile Queue Length [veh/ln]	8.96	15.40	7.48	7.79	11.55	3.55	6.03	0.69	0.11	6.44	6.76	0.70
95th-Percentile Queue Length [ft/ln]	224.12	384.98	187.05	194.74	288.87	88.78	150.79	17.21	2.74	160.94	169.01	17.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.49	68.94	61.11	86.65	70.48	63.21	85.54	1.28	0.23	86.38	7.67	6.19
Movement LOS	E	E	E	F	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	68.58			74.13			5.52			13.71		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	23.86											
Intersection LOS	C											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.319	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	942	892
d_b, Bicycle Delay [s]	51.20	51.20	22.46	24.65
l_b,int, Bicycle LOS Score for Intersection	2.352	2.091	2.784	2.409
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	7.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	56	18	60	41	28	50	0	1419	36	0	985	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	18	60	41	28	50	0	1419	36	0	985	83
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9500	0.9560	0.9560	0.9500	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	5	16	11	7	13	0	371	9	0	258	22
Total Analysis Volume [veh/h]	59	19	63	43	29	52	0	1484	38	0	1030	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			14			13			0		
v_di, Inbound Pedestrian Volume crossing m	0			13			14			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			12			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	35	0	0	30	0	0	95	0	0	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	13	13	13	13	13	121	121	121	121
g / C, Green / Cycle	0.08	0.08	0.08	0.08	0.08	0.75	0.75	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.04	0.02	0.05	0.42	0.02	0.29	0.05
s, saturation flow rate [veh/h]	1781	1870	1510	1781	1628	3560	1527	3560	1589
c, Capacity [veh/h]	145	153	123	145	133	2686	1152	2686	1199
d1, Uniform Delay [s]	69.80	68.18	70.27	69.15	71.02	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.82	0.36	3.25	1.12	4.45	0.82	0.05	0.42	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.12	0.51	0.30	0.61	0.55	0.03	0.38	0.07
d, Delay for Lane Group [s/veh]	71.61	68.54	73.52	70.27	75.47	0.82	0.05	0.42	0.12
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.39	0.74	2.60	1.73	3.42	0.31	0.02	0.16	0.04
50th-Percentile Queue Length [ft/ln]	59.72	18.59	65.02	43.18	85.45	7.69	0.43	3.88	0.98
95th-Percentile Queue Length [veh/ln]	4.30	1.34	4.68	3.11	6.15	0.55	0.03	0.28	0.07
95th-Percentile Queue Length [ft/ln]	107.50	33.47	117.03	77.72	153.80	13.84	0.77	6.99	1.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.61	68.54	73.52	70.27	75.47	75.47	0.00	0.82	0.05	0.00	0.42	0.12
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	72.05			73.67			0.81			0.39		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.22											
Intersection LOS	A											
Intersection V/C	0.521											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.21	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.018	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	280	1092	1092
d_b, Bicycle Delay [s]	54.84	59.53	16.51	16.48
l_b,int, Bicycle LOS Score for Intersection	1.792	1.764	2.815	2.481
Bicycle LOS	A	A	C	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	48	276	75	341	196	58	124	1328	540	134	920	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	276	75	341	196	58	124	1328	540	134	920	44
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	73	20	90	52	15	33	349	142	35	242	12
Total Analysis Volume [veh/h]	50	290	79	359	206	61	130	1396	568	141	967	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			18			0			19		
v_di, Inbound Pedestrian Volume crossing m	0			19			0			18		
v_co, Outbound Pedestrian Volume crossing	16			6			6			15		
v_ci, Inbound Pedestrian Volume crossing mi	15			6			6			16		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	13			14			5			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.2	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.20	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.20	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	21	21	28	28	28	15	73	73	16	74	74
g / C, Green / Cycle	0.14	0.14	0.18	0.18	0.18	0.10	0.49	0.49	0.10	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.10	0.11	0.04	0.07	0.39	0.37	0.08	0.27	0.03
s, saturation flow rate [veh/h]	1848	1726	3459	1870	1452	1781	3560	1555	1781	3560	1559
c, Capacity [veh/h]	256	239	636	344	267	173	1731	756	185	1750	767
d1, Uniform Delay [s]	63.03	63.30	55.84	56.24	52.04	63.62	21.21	19.92	60.34	8.12	6.98
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.71	3.49	0.29	0.63	0.16	2.44	4.13	6.77	2.43	1.26	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.86	0.56	0.60	0.23	0.75	0.81	0.75	0.76	0.55	0.06
d, Delay for Lane Group [s/veh]	65.74	66.79	56.14	56.87	52.20	66.06	25.34	26.69	62.77	9.38	7.13
Lane Group LOS	E	E	E	E	D	E	C	C	E	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.16	7.95	6.27	7.28	1.99	4.78	16.31	12.78	4.94	3.72	0.33
50th-Percentile Queue Length [ft/ln]	204.09	198.65	156.73	181.90	49.73	119.43	407.68	319.53	123.43	92.88	8.20
95th-Percentile Queue Length [veh/ln]	12.85	12.57	10.38	11.70	3.58	8.36	22.93	18.64	8.58	6.69	0.59
95th-Percentile Queue Length [ft/ln]	321.23	314.22	259.38	292.49	89.51	209.04	573.24	466.11	214.53	167.18	14.76

Movement, Approach, & Intersection Results

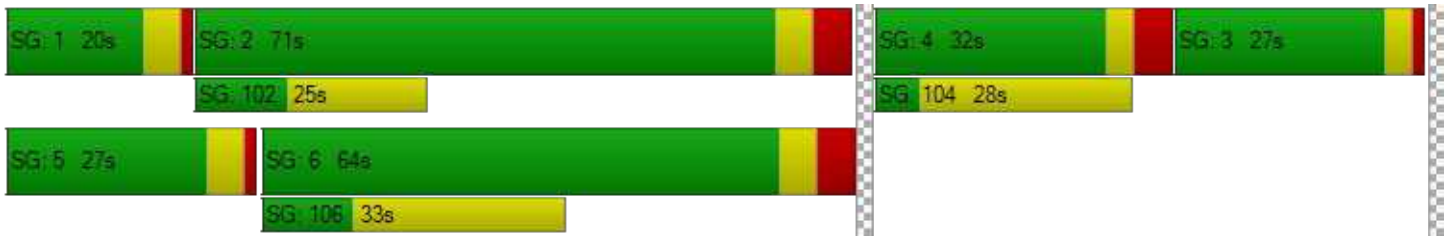
d_M, Delay for Movement [s/veh]	65.74	66.20	66.79	56.14	56.87	52.20	66.06	25.34	26.69	62.77	9.38	7.13
Movement LOS	E	E	E	E	E	D	E	C	C	E	A	A
d_A, Approach Delay [s/veh]	66.26			55.99			28.23			15.82		
Approach LOS	E			E			C			B		
d_I, Intersection Delay [s/veh]	32.65											
Intersection LOS	C											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.73	61.73	0.00	66.34
l_p,int, Pedestrian LOS Score for Intersectio	2.349	2.740	0.000	2.983
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	306	333	745	838
d_b, Bicycle Delay [s]	54.19	52.52	29.65	25.35
l_b,int, Bicycle LOS Score for Intersection	1.905	2.593	3.287	2.512
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	7.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	57	5	30	36	10	45	47	1717	10	68	1242	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	5	30	36	10	45	47	1717	10	68	1242	35
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	1	8	9	3	12	12	450	3	18	326	9
Total Analysis Volume [veh/h]	60	5	31	38	10	47	49	1802	10	71	1303	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			4			5		
v_di, Inbound Pedestrian Volume crossing m	5			4			4			6		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			16			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	36	36	36	36	36	36	29	95	95	29	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	21	21	21	9	120	120	8	120	120
g / C, Green / Cycle	0.13	0.13	0.13	0.06	0.75	0.75	0.05	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.09	0.04	0.03	0.03	0.33	0.33	0.04	0.25	0.25
s, saturation flow rate [veh/h]	1023	1311	1528	1781	3560	1864	1781	3560	1839
c, Capacity [veh/h]	174	216	205	99	2679	1402	90	2660	1374
d1, Uniform Delay [s]	69.21	62.11	61.80	71.92	0.00	0.00	73.82	0.08	0.08
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.72	0.51	0.56	3.80	0.54	1.02	14.42	0.34	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.22	0.23	0.50	0.44	0.44	0.79	0.33	0.33
d, Delay for Lane Group [s/veh]	71.93	62.62	62.36	75.72	0.54	1.02	88.25	0.41	0.73
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.99	1.84	1.79	2.02	0.20	0.40	3.20	0.18	0.30
50th-Percentile Queue Length [ft/ln]	99.82	45.92	44.73	50.58	4.98	9.95	79.93	4.38	7.54
95th-Percentile Queue Length [veh/ln]	7.19	3.31	3.22	3.64	0.36	0.72	5.75	0.32	0.54
95th-Percentile Queue Length [ft/ln]	179.67	82.66	80.51	91.05	8.96	17.91	143.87	7.88	13.58

Movement, Approach, & Intersection Results

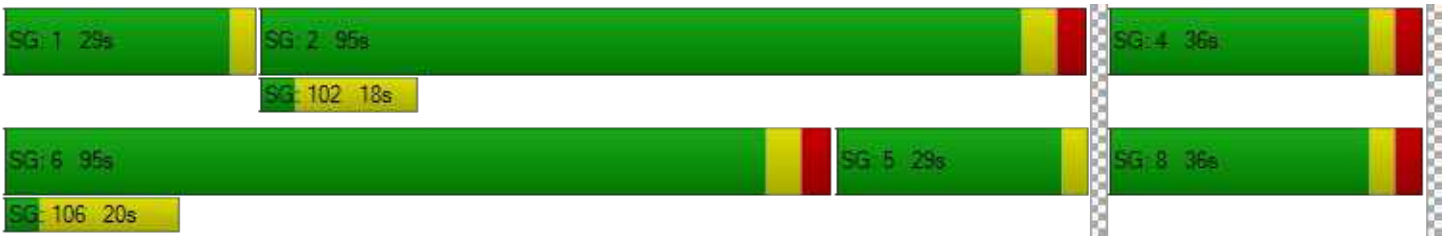
d_M, Delay for Movement [s/veh]	71.93	71.93	71.93	62.62	62.62	62.36	75.72	0.70	1.02	88.25	0.52	0.73
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	71.93			62.49			2.68			4.94		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.16											
Intersection LOS	A											
Intersection V/C	0.499											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.822	1.999	0.000	0.000
Crosswalk LOS	A	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	1099	1099
d_b, Bicycle Delay [s]	53.05	53.24	16.29	16.25
l_b,int, Bicycle LOS Score for Intersection	1.718	1.716	2.583	2.336
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	238	0	183	0	1	3	270	1660	1	2	1130	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	238	0	183	0	1	3	270	1660	1	2	1130	120
Peak Hour Factor	0.9520	0.9900	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	0	48	0	0	1	71	436	0	1	297	32
Total Analysis Volume [veh/h]	250	0	192	0	1	3	284	1744	1	2	1187	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			7			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	5	0	0	10	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	41	41	0	0	41	0	55	85	0	34	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	35	35	35	35	28	114	114	0	87	87
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.17	0.71	0.71	0.00	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.18	0.12	0.00	0.00	0.16	0.32	0.32	0.00	0.25	0.25
s, saturation flow rate [veh/h]	1412	1592	1191	1651	1781	3560	1869	1781	3560	1766
c, Capacity [veh/h]	333	350	162	363	307	2545	1336	4	1939	962
d1, Uniform Delay [s]	61.61	55.40	0.00	48.83	60.57	1.17	1.17	79.64	12.17	12.19
k, delay calibration	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	1.34	0.00	0.01	11.53	0.58	1.10	61.56	0.76	1.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.55	0.00	0.01	0.92	0.45	0.45	0.46	0.45	0.45
d, Delay for Lane Group [s/veh]	66.35	56.74	0.00	48.85	72.11	1.75	2.27	141.20	12.93	13.74
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.30	7.07	0.00	0.13	11.94	1.19	1.44	0.16	5.51	5.73
50th-Percentile Queue Length [ft/ln]	257.57	176.69	0.00	3.22	298.52	29.74	36.05	3.91	137.75	143.19
95th-Percentile Queue Length [veh/ln]	15.57	11.43	0.00	0.23	17.61	2.14	2.60	0.28	9.36	9.65
95th-Percentile Queue Length [ft/ln]	389.17	285.69	0.00	5.79	440.19	53.54	64.89	7.04	233.99	241.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.35	56.74	56.74	0.00	48.85	48.85	72.11	1.93	2.27	141.20	13.14	13.74
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	62.17			48.85			11.75			13.39		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	18.24											
Intersection LOS	B											
Intersection V/C	0.623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.971	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	437	974	711
d_b, Bicycle Delay [s]	48.88	48.83	21.14	33.29
l_b,int, Bicycle LOS Score for Intersection	2.289	1.566	2.676	2.283
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.445

Intersection Setup

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	22	0	35	1	1	1	138	1946	2	25	1331	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	0	35	1	1	1	138	1946	2	25	1331	10
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	9	0	0	0	36	514	1	7	351	3
Total Analysis Volume [veh/h]	23	0	37	1	1	1	146	2055	2	26	1405	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			17			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	40	0	0	40	0	35	105	0	15	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	15	132	132	3	120	120
g / C, Green / Cycle	0.08	0.08	0.08	0.09	0.82	0.82	0.02	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.00	0.08	0.38	0.38	0.01	0.26	0.26
s, saturation flow rate [veh/h]	1469	1589	1635	1781	3560	1869	1781	3560	1861
c, Capacity [veh/h]	168	133	167	168	2927	1536	34	2658	1390
d1, Uniform Delay [s]	68.04	68.76	67.27	68.93	0.00	0.00	77.62	0.09	0.09
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.12	0.04	12.44	0.52	1.00	29.20	0.36	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.28	0.02	0.87	0.46	0.46	0.77	0.35	0.35
d, Delay for Lane Group [s/veh]	68.40	69.88	67.32	81.37	0.52	1.00	106.82	0.46	0.79
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.90	1.48	0.12	6.27	0.21	0.43	1.34	0.20	0.33
50th-Percentile Queue Length [ft/ln]	22.61	37.09	2.94	156.75	5.33	10.64	33.43	4.88	8.30
95th-Percentile Queue Length [veh/ln]	1.63	2.67	0.21	10.38	0.38	0.77	2.41	0.35	0.60
95th-Percentile Queue Length [ft/ln]	40.69	66.77	5.30	259.41	9.59	19.16	60.18	8.78	14.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.40	68.40	69.88	67.32	67.32	67.32	81.37	0.69	1.00	106.82	0.57	0.79
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.31			67.32			6.03			2.49		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.73											
Intersection LOS	A											
Intersection V/C	0.445											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.028	1.751	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	412	412	1225	975
d_b, Bicycle Delay [s]	50.41	50.41	12.12	21.03
l_b,int, Bicycle LOS Score for Intersection	1.659	1.565	2.771	2.353
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	282	317	77	360	262	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.90	0.50	2.30	0.00	0.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	282	317	77	360	262	90
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	91	22	103	75	26
Total Analysis Volume [veh/h]	323	364	88	413	300	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	15		0		16	
v_ci, Inbound Pedestrian Volume crossing mi	16		0		15	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		15		8	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	10	10	2	16	7	7
g / C, Green / Cycle	0.31	0.31	0.07	0.51	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.17	0.23	0.05	0.22	0.17	0.07
s, saturation flow rate [veh/h]	1861	1553	1802	1865	1810	1555
c, Capacity [veh/h]	585	488	125	955	418	359
d1, Uniform Delay [s]	9.09	9.71	14.53	4.88	11.31	10.08
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.87	2.69	0.12	0.87	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.75	0.70	0.43	0.72	0.29
d, Delay for Lane Group [s/veh]	9.39	10.58	17.22	5.00	12.18	10.24
Lane Group LOS	A	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.29	1.61	0.61	0.91	1.51	0.45
50th-Percentile Queue Length [ft/ln]	32.25	40.29	15.22	22.68	37.76	11.19
95th-Percentile Queue Length [veh/ln]	2.32	2.90	1.10	1.63	2.72	0.81
95th-Percentile Queue Length [ft/ln]	58.05	72.53	27.39	40.82	67.97	20.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.39	10.58	17.22	5.00	12.18	10.24
Movement LOS	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	10.02		7.15		11.68	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.54					
Intersection LOS	A					
Intersection V/C	0.514					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	8.18	0.55
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.133	2.051
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1886	2515	1572
d_b, Bicycle Delay [s]	0.05	1.06	0.73
l_b,int, Bicycle LOS Score for Intersection	2.693	2.386	1.560
Bicycle LOS	B	B	A

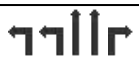
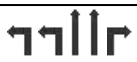
Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: Sand Hill Rd/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	300	521	144	327	922	158	266	722	249	110	500	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	300	521	144	327	922	158	266	722	249	110	500	166
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	137	38	86	242	42	70	190	65	29	131	44
Total Analysis Volume [veh/h]	315	548	151	344	970	166	280	759	262	116	526	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			6			6			0		
v_di, Inbound Pedestrian Volume crossing m	0			6			6			1		
v_co, Outbound Pedestrian Volume crossing	2			1			3			2		
v_ci, Inbound Pedestrian Volume crossing mi	3			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			9			33			20		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	8	8	4	8	8	8	8	8	8	8	8
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	20	44	44	20	44	44	20	40	40	16	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	3.6	3.6	2.0	3.6	3.6	2.1	3.6	3.6	2.1	3.6	3.6
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.60	5.60	4.00	5.60	5.60	4.10	5.60	5.60	4.10	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.60	3.60	2.00	3.60	3.60	2.10	3.60	3.60	2.10	3.60	3.60
g_i, Effective Green Time [s]	13	50	50	14	50	50	12	29	29	8	25	25
g / C, Green / Cycle	0.11	0.41	0.41	0.12	0.42	0.42	0.10	0.24	0.24	0.07	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.09	0.15	0.10	0.10	0.27	0.11	0.08	0.21	0.17	0.03	0.15	0.11
s, saturation flow rate [veh/h]	3459	3560	1541	3459	3560	1560	3459	3560	1501	3459	3560	1535
c, Capacity [veh/h]	378	1465	634	406	1494	655	344	870	367	228	751	324
d1, Uniform Delay [s]	52.44	24.59	22.99	51.96	27.81	22.59	53.02	43.59	41.07	54.25	43.91	42.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.12	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.82	0.73	0.88	4.92	2.20	0.93	4.68	2.90	2.87	1.76	1.20	1.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.37	0.24	0.85	0.65	0.25	0.81	0.87	0.71	0.51	0.70	0.54
d, Delay for Lane Group [s/veh]	57.26	25.32	23.87	56.88	30.00	23.52	57.69	46.50	43.94	56.01	45.11	43.46
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.86	5.49	2.91	5.31	11.27	3.18	4.33	11.01	7.22	1.74	7.29	4.69
50th-Percentile Queue Length [ft/ln]	121.61	137.26	72.70	132.71	281.74	79.41	108.18	275.21	180.61	43.49	182.25	117.30
95th-Percentile Queue Length [veh/ln]	8.48	9.33	5.23	9.09	16.78	5.72	7.74	16.45	11.63	3.13	11.72	8.24
95th-Percentile Queue Length [ft/ln]	212.04	233.33	130.86	227.18	419.38	142.93	193.47	411.25	290.81	78.28	292.95	206.11

Movement, Approach, & Intersection Results

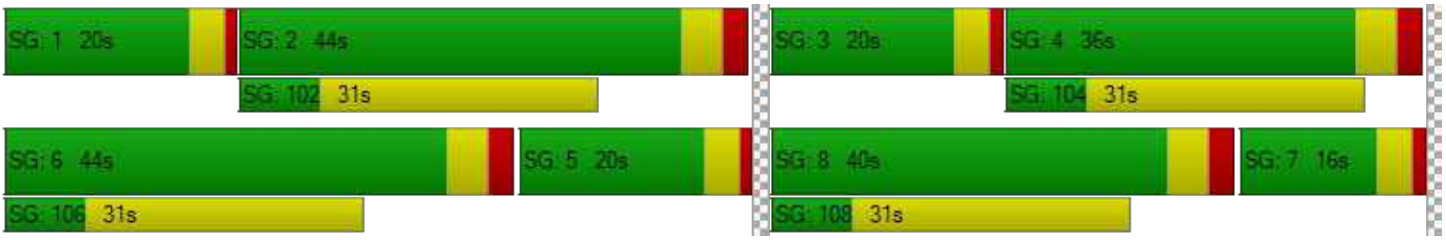
d_M, Delay for Movement [s/veh]	57.26	25.32	23.87	56.88	30.00	23.52	57.69	46.50	43.94	56.01	45.11	43.46
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	35.03			35.52			48.39			46.31		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.95											
Intersection LOS	D											
Intersection V/C	0.666											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.55	49.55	49.55	49.55
l_p,int, Pedestrian LOS Score for Intersectio	3.004	3.081	2.985	2.942
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	573	506
d_b, Bicycle Delay [s]	28.18	27.91	31.08	33.83
l_b,int, Bicycle LOS Score for Intersection	2.396	2.781	2.633	2.234
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	142	17	219	0	6	23	6	0	2	70	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	142	17	219	0	6	23	6	0	2	70	115
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	38	5	59	0	2	6	2	0	1	19	31
Total Analysis Volume [veh/h]	0	152	18	235	0	6	25	6	0	2	75	123
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	742	634	706
Degree of Utilization, x	0.55	0.06	0.28

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.34	0.19	1.16
95th-Percentile Queue Length [ft]	83.50	4.64	29.10
Approach Delay [s/veh]	13.52	9.03	10.10
Approach LOS	B	A	B
Intersection Delay [s/veh]	11.99		
Intersection LOS	B		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	132	73	8	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	73	8	0	0	0	0	0
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	20	2	0	0	0	0	0
Total Analysis Volume [veh/h]	142	78	9	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	655	620
Degree of Utilization, x	0.35	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.57	0.00
95th-Percentile Queue Length [ft]	39.18	0.00
Approach Delay [s/veh]	11.42	0.00
Approach LOS	B	A
Intersection Delay [s/veh]	11.99	
Intersection LOS	B	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	13.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	60	339	73	43	395	67	115	19	45	53	30	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	339	73	43	395	67	115	19	45	53	30	58
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	99	21	13	115	19	33	6	13	15	9	17
Total Analysis Volume [veh/h]	70	394	85	50	459	78	134	22	52	62	35	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			5			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	0			6			0			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	11			7			1			8		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	43	43	43	43	43	43	43
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	17	23	17	11	11	11
g / C, Green / Cycle	0.54	0.41	0.54	0.39	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.05	0.30	0.20	0.05	0.06
s, saturation flow rate [veh/h]	1037	1802	1058	1815	1027	1326	1638
c, Capacity [veh/h]	601	734	637	720	391	172	403
d1, Uniform Delay [s]	6.06	10.24	5.56	11.08	16.24	13.08	12.99
k, delay calibration	0.23	0.23	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	2.10	0.05	3.31	1.13	1.26	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.65	0.08	0.75	0.53	0.36	0.25
d, Delay for Lane Group [s/veh]	6.24	12.34	5.61	14.39	17.37	14.34	13.31
Lane Group LOS	A	B	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.20	3.01	0.13	3.78	1.85	0.48	0.72
50th-Percentile Queue Length [ft/ln]	5.02	75.24	3.24	94.44	46.19	11.97	18.00
95th-Percentile Queue Length [veh/ln]	0.36	5.42	0.23	6.80	3.33	0.86	1.30
95th-Percentile Queue Length [ft/ln]	9.04	135.44	5.83	170.00	83.13	21.55	32.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.24	12.34	12.34	5.61	14.39	14.39	17.37	17.37	17.37	14.34	13.31	13.31
Movement LOS	A	B	B	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	11.57			13.64			17.37			13.70		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.41											
Intersection LOS	B											
Intersection V/C	0.574											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	-4.0	0.0	-5.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	25.59	0.00	26.70
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.431	0.000	2.064
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1401	1401	1401	1401
d_b, Bicycle Delay [s]	1.93	1.92	1.92	1.93
l_b,int, Bicycle LOS Score for Intersection	2.465	2.528	1.903	1.830
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	296	687	425	559	604	139
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	296	687	425	559	604	139
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	175	108	143	154	35
Total Analysis Volume [veh/h]	302	701	434	570	616	142
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	29		41		20	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	10	7	10	8	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	38	48	44	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	31	31	31	60	94	26	26
g / C, Green / Cycle	0.24	0.24	0.24	0.46	0.73	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.17	0.19	0.19	0.24	0.36	0.17	0.09
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1564	3560	1535
c, Capacity [veh/h]	419	440	440	816	1133	720	310
d1, Uniform Delay [s]	45.78	46.79	46.79	25.25	7.67	50.05	45.45
k, delay calibration	0.11	0.13	0.13	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.35	4.03	4.03	2.48	1.60	3.07	1.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.80	0.80	0.53	0.50	0.86	0.46
d, Delay for Lane Group [s/veh]	48.13	50.82	50.82	27.73	9.27	53.12	46.50
Lane Group LOS	D	D	D	C	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	9.27	11.17	11.17	10.13	6.76	9.97	4.14
50th-Percentile Queue Length [ft/ln]	231.79	279.14	279.14	253.24	169.10	249.19	103.39
95th-Percentile Queue Length [veh/ln]	14.27	16.65	16.65	15.35	11.03	15.15	7.44
95th-Percentile Queue Length [ft/ln]	356.63	416.14	416.14	383.73	275.73	378.64	186.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.13	50.82	27.73	9.27	53.12	46.50
Movement LOS	D	D	C	A	D	D
d_A, Approach Delay [s/veh]	50.01		17.25		51.88	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	38.63					
Intersection LOS	D					
Intersection V/C	0.689					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	521	601
d_b, Bicycle Delay [s]	29.28	36.27	32.11
l_b,int, Bicycle LOS Score for Intersection	2.387	1.560	2.185
Bicycle LOS	B	A	B

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road/101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.827

Intersection Setup

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1992	0	0	785	605	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1992	0	0	785	605	177
Peak Hour Factor	0.9550	1.0000	1.0000	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	521	0	0	205	158	46
Total Analysis Volume [veh/h]	2086	0	0	822	634	185
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	100	0	0	100	100	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	70	0	0	70	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	Yes	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	68	68	28	28
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.59	0.23	0.18	0.07
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2401	2401	971	790
d1, Uniform Delay [s]	12.84	6.91	31.73	27.74
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	0.39	3.41	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.34	0.65	0.23
d, Delay for Lane Group [s/veh]	17.45	7.30	35.14	28.43
Lane Group LOS	B	A	D	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	17.06	3.42	7.11	1.77
50th-Percentile Queue Length [ft/ln]	426.54	85.59	177.68	44.30
95th-Percentile Queue Length [veh/ln]	23.84	6.16	11.48	3.19
95th-Percentile Queue Length [ft/ln]	595.89	154.07	286.98	79.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.45	0.00	0.00	7.30	35.14	28.43
Movement LOS	B			A	D	C
d_A, Approach Delay [s/veh]	17.45		7.30		33.62	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	18.77					
Intersection LOS	B					
Intersection V/C	0.827					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	41.46	39.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.892	2.336
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	515
d_b, Bicycle Delay [s]	6.02	6.04	27.58
l_b,int, Bicycle LOS Score for Intersection	3.281	2.238	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	19.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	330	192	21	20	105	332	11	70	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	330	192	21	20	105	332	11	70	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	90	52	6	5	29	90	3	19	2
Total Analysis Volume [veh/h]	10	193	16	358	208	23	22	114	360	12	76	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	451	486	489	531	499	560	459
Degree of Utilization, x	0.02	0.43	0.73	0.44	0.27	0.64	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.07	2.14	6.00	2.19	1.10	4.57	0.77
95th-Percentile Queue Length [ft]	1.70	53.40	150.11	54.65	27.44	114.19	19.27
Approach Delay [s/veh]	15.39		22.54		17.95		12.89
Approach LOS	C		C		C		B
Intersection Delay [s/veh]	19.14						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1116	364	0	751	596	0	0	0	534	0	333
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1116	364	0	751	596	0	0	0	534	0	333
Peak Hour Factor	1.0000	0.9520	0.9520	1.0000	0.9520	0.9520	1.0000	1.0000	1.0000	0.9520	1.0000	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	293	96	0	197	157	0	0	0	140	0	87
Total Analysis Volume [veh/h]	0	1172	382	0	789	626	0	0	0	561	0	350
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	112	0	0	112	0	0	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	111	111	111		26	26
g / C, Green / Cycle	0.76	0.76	0.76		0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.23	0.15	0.40		0.16	0.12
s, saturation flow rate [veh/h]	5094	5094	1550		3459	2813
c, Capacity [veh/h]	3894	3894	1185		624	507
d1, Uniform Delay [s]	5.22	4.75	6.63		58.08	55.57
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.20	0.12	1.69		5.04	1.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.20	0.53		0.90	0.69
d, Delay for Lane Group [s/veh]	5.42	4.87	8.31		63.11	57.26
Lane Group LOS	A	A	A		E	E
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	3.42	2.10	7.38		10.51	6.13
50th-Percentile Queue Length [ft/ln]	85.61	52.46	184.48		262.84	153.37
95th-Percentile Queue Length [veh/ln]	6.16	3.78	11.83		15.83	10.20
95th-Percentile Queue Length [ft/ln]	154.10	94.44	295.86		395.78	254.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	5.42	0.00	0.00	4.87	8.31	0.00	0.00	0.00	63.11	0.00	57.26
Movement LOS		A			A	A				E		E
d_A, Approach Delay [s/veh]	4.13			6.39			0.00			60.86		
Approach LOS	A			A			A			E		
d_I, Intersection Delay [s/veh]	19.82											
Intersection LOS	B											
Intersection V/C	0.636											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.74	0.00	63.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.940	0.000	1.447	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1491	1491	0	400
d_b, Bicycle Delay [s]	4.70	4.72	72.46	46.36
l_b,int, Bicycle LOS Score for Intersection	2.204	2.338	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	100.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

Intersection Setup

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1090	608	0	986	398	0	0	0	266	0	849
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1090	608	0	986	398	0	0	0	266	0	849
Peak Hour Factor	1.0000	0.9330	0.9330	1.0000	0.9330	0.9330	1.0000	1.0000	1.0000	0.9330	1.0000	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	292	163	0	264	107	0	0	0	71	0	227
Total Analysis Volume [veh/h]	0	1168	652	0	1057	427	0	0	0	285	0	910
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	2.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	95	0	0	95	0	0	0	0	25	0	25
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	91	91	116		21	46
g / C, Green / Cycle	0.63	0.63	0.80		0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.39	0.42	0.35		0.08	0.55
s, saturation flow rate [veh/h]	3003	1556	3003		3459	1658
c, Capacity [veh/h]	1886	977	2401		502	525
d1, Uniform Delay [s]	16.39	16.98	4.48		57.71	49.51
k, delay calibration	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.54	3.60	0.59		1.01	337.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.67	0.44		0.57	1.73
d, Delay for Lane Group [s/veh]	17.93	20.59	5.07		58.72	387.25
Lane Group LOS	B	C	A		E	F
Critical Lane Group	No	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	7.98	14.35	2.94		4.97	34.09
50th-Percentile Queue Length [ft/ln]	199.41	358.76	73.60		124.23	852.30
95th-Percentile Queue Length [veh/ln]	12.61	20.56	5.30		8.62	55.79
95th-Percentile Queue Length [ft/ln]	315.20	514.08	132.48		215.62	1394.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	17.93	20.59	0.00	5.07	0.00	0.00	0.00	0.00	58.72	0.00	387.25
Movement LOS		B	C		A					E		F
d_A, Approach Delay [s/veh]	18.88			3.68			0.00			308.90		
Approach LOS	B			A			A			F		
d_I, Intersection Delay [s/veh]	100.05											
Intersection LOS	F											
Intersection V/C	0.626											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	63.75	63.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.054	1.447	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1601	0	290
d_b, Bicycle Delay [s]	10.05	2.90	72.47	52.99
l_b,int, Bicycle LOS Score for Intersection	2.561	2.141	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	9.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	15	245	54	97	118	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	245	54	97	118	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	67	15	26	32	2
Total Analysis Volume [veh/h]	16	266	59	105	128	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	648	713	823	701
Degree of Utilization, x	0.02	0.37	0.20	0.19

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	1.73	0.74	0.71
95th-Percentile Queue Length [ft]	1.90	43.27	18.50	17.87
Approach Delay [s/veh]	10.59		8.46	9.37
Approach LOS	B		A	A
Intersection Delay [s/veh]	9.70			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	603	0	0	400	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	603	0	0	400	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	0	0	100	0	0
Total Analysis Volume [veh/h]	603	0	0	400	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.69	0.00	18.41	12.22
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		15.31	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	603	0	0	400	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	603	0	0	400	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	0	0	100	0	0
Total Analysis Volume [veh/h]	603	0	0	400	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.69	0.00	18.41	12.22
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		15.31	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	All-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.307

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	26	156	32	8	162	9	36	97	9	3	61	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	156	32	8	162	9	36	97	9	3	61	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	42	9	2	44	2	10	26	2	1	17	3
Total Analysis Volume [veh/h]	28	170	35	9	176	10	39	105	10	3	66	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	758	745	704	700
Degree of Utilization, x	0.31	0.26	0.22	0.11

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.30	1.05	0.83	0.39
95th-Percentile Queue Length [ft]	32.60	26.22	20.75	9.63
Approach Delay [s/veh]	9.84	9.54	9.54	8.81
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.56			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.297

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	168	42	29	181	78	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	42	29	181	78	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	12	8	50	22	13
Total Analysis Volume [veh/h]	187	47	32	201	87	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	809	784	734
Degree of Utilization, x	0.29	0.30	0.19

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.20	1.25	0.69
95th-Percentile Queue Length [ft]	30.02	31.15	17.34
Approach Delay [s/veh]	9.25	9.52	9.04
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.31		
Intersection LOS	A		

Intersection Level Of Service Report
Intersection 292: Ravesnwood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	39.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	4	589	7	5	420	5	11	5	16	5	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	589	7	5	420	5	11	5	16	5	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	158	2	1	113	1	3	1	4	1	0	5
Total Analysis Volume [veh/h]	4	633	8	5	452	5	12	5	17	5	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.78	0.01	0.04	0.55	0.00	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	32.19	24.37	23.32	39.60	16.10	15.06	7.27	0.00	0.00	7.27	0.00	0.00
Movement LOS	D	C	C	E	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	8.35	8.35	8.35	4.04	4.04	4.04	0.02	0.02	0.02	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	208.86	208.86	208.86	101.01	101.01	101.01	0.58	0.58	0.58	0.25	0.25	0.25
d_A, Approach Delay [s/veh]	24.40			16.34			2.57			1.51		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	20.10											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.297

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	55	2	35	5	0	2	12	183	4	3	96	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	2	35	5	0	2	12	183	4	3	96	24
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	1	11	2	0	1	4	56	1	1	29	7
Total Analysis Volume [veh/h]	67	2	43	6	0	2	15	223	5	4	117	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	762	722	818	820
Degree of Utilization, x	0.15	0.01	0.30	0.18

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.51	0.03	1.25	0.67
95th-Percentile Queue Length [ft]	12.84	0.84	31.15	16.66
Approach Delay [s/veh]	8.54	8.04	9.25	8.37
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.82			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	293	0	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	293	0	0	149
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	73	0	0	37
Total Analysis Volume [veh/h]	0	0	293	0	0	149
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.28	9.82	0.00	0.00	7.84	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.55		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.332

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	293	0	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	293	0	0	149
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	73	0	0	37
Total Analysis Volume [veh/h]	0	0	293	0	0	149
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	740	883	855
Degree of Utilization, x	0.00	0.33	0.17

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	1.46	0.63
95th-Percentile Queue Length [ft]	0.00	36.53	15.70
Approach Delay [s/veh]	0.00	9.09	8.09
Approach LOS	A	A	A
Intersection Delay [s/veh]	8.75		
Intersection LOS	A		

Vistro File:
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Report File: P:\...\BPM.pdf

Scenario 17 Near-Term (2027) PM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Left	0.784	23.0	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	NEB Left	0.636	24.5	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	SB Left	0.681	33.6	C
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.473	21.5	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.530	32.9	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	SEB Left	0.623	34.4	C
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	0.094	45.6	E
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NEB Thru	0.908	97.5	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	EB Thru	0.908	125.2	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	WB Right	1.540	320.5	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.054	44.8	D
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Right	1.598	245.5	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.109	122.3	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	NEB Left	0.750	11.0	B
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.537	13.5	B
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.711	13.7	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.674	12.3	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NWB Right	0.661	53.7	D
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	NEB Thru	0.581	61.9	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.603	16.0	B
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	4.179	30.3	C
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	SEB Left	0.695	33.8	C
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	SEB Left	0.657	26.0	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.539	7.8	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NWB Left	0.753	36.2	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.541	9.7	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.640	18.1	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.450	5.9	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.581	11.2	B
39	Sand Hill Rd/Santa Cruz Ave	Signalized	HCM 7th Edition	NWB Left	0.692	41.5	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	NB Right	0.626	14.1	B
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Left	0.599	14.3	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	NEB Thru	0.708	38.9	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 7th Edition	NWB Left	0.859	20.5	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	SWB Left	0.849	23.2	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.692	25.1	C
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.665	95.7	F

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.393	10.1	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NEB Thru	0.006	0.0	A
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NEB Thru	0.006	0.0	A
254	Laurel Street and Glenwood Ave	All-way stop	HCM 7th Edition	NEB Thru	0.325	9.8	A
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	NEB Thru	0.364	9.8	A
292	Ravesnwood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SWB Left	0.039	40.0	E
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.322	9.1	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	NWB Thru	0.003	0.0	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.351	9.0	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	962	947	279	1533	542
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	962	947	279	1533	542
Peak Hour Factor	1.0000	0.9720	0.9720	1.0000	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	247	244	70	394	139
Total Analysis Volume [veh/h]	0	990	974	279	1577	558
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	100	100	0	100	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	40	40	0	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	5	0
Pedestrian Clearance [s]	0	12	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	48	45	48	48
g / C, Green / Cycle	0.48	0.45	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.25	0.27	0.46	0.35
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	1901	1617	1659	763
d1, Uniform Delay [s]	18.32	20.52	24.90	20.87
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.02	1.67	1.55	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.60	0.95	0.73
d, Delay for Lane Group [s/veh]	19.34	22.19	26.45	21.38
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.81	8.45	17.14	10.07
50th-Percentile Queue Length [ft/ln]	195.33	211.33	428.58	251.67
95th-Percentile Queue Length [veh/ln]	12.40	13.22	23.93	15.27
95th-Percentile Queue Length [ft/ln]	309.93	330.53	598.33	381.75

Movement, Approach, & Intersection Results

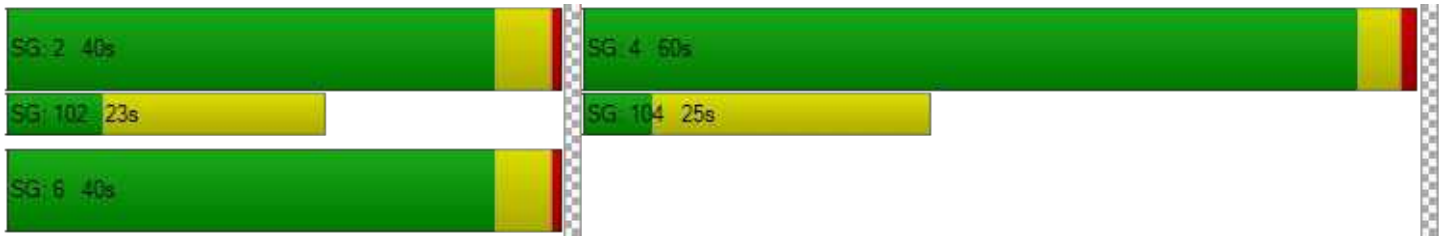
d_M, Delay for Movement [s/veh]	0.00	19.34	22.19	0.00	26.45	21.38
Movement LOS		B	C		C	C
d_A, Approach Delay [s/veh]	19.34		22.19		25.13	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	23.03					
Intersection LOS	C					
Intersection V/C	0.784					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.43	0.00	39.63
l_p,int, Pedestrian LOS Score for Intersectio	2.855	0.000	2.639
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1117
d_b, Bicycle Delay [s]	20.95	20.90	9.74
l_b,int, Bicycle LOS Score for Intersection	2.376	2.363	1.560
Bicycle LOS	B	B	A

Sequence

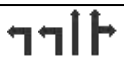
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	39	1158	2	73	1044	246	15	8	257	272	5	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1158	2	73	1044	246	15	8	257	272	5	2
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	301	1	19	271	64	4	2	67	71	1	1
Total Analysis Volume [veh/h]	40	1202	2	76	1084	255	16	8	267	282	5	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	57	0	20	62	0	0	36	0	0	32	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	145	145	145	145	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	95	95	7	96	96	18	18	17	17
g / C, Green / Cycle	0.04	0.66	0.66	0.05	0.66	0.66	0.13	0.13	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.02	0.37	0.38	0.01	0.09	0.08	0.08
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1733	1810	2813	1781	1781
c, Capacity [veh/h]	76	2338	1227	165	1237	1147	226	351	205	205
d1, Uniform Delay [s]	67.83	10.96	10.96	67.09	13.10	13.28	56.17	61.24	61.64	61.64
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.10	0.39	0.75	0.74	1.80	2.05	0.15	2.54	3.25	3.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.34	0.34	0.46	0.56	0.57	0.11	0.76	0.70	0.70
d, Delay for Lane Group [s/veh]	71.93	11.35	11.71	67.83	14.90	15.32	56.32	63.77	64.89	64.89
Lane Group LOS	E	B	B	E	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	5.56	5.96	1.39	12.04	11.63	0.80	4.92	5.37	5.37
50th-Percentile Queue Length [ft/ln]	38.40	139.11	149.03	34.63	301.09	290.72	20.03	123.12	134.13	134.13
95th-Percentile Queue Length [veh/ln]	2.76	9.43	9.97	2.49	17.73	17.22	1.44	8.56	9.16	9.16
95th-Percentile Queue Length [ft/ln]	69.12	235.83	249.13	62.33	443.37	430.53	36.05	214.11	229.10	229.09

Movement, Approach, & Intersection Results

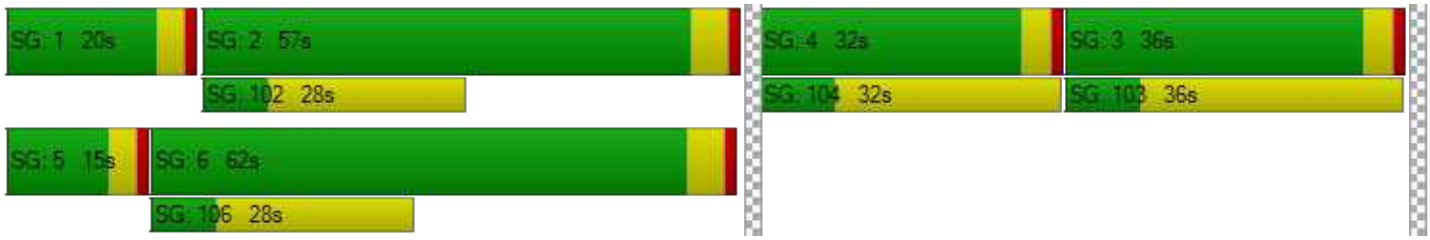
d_M, Delay for Movement [s/veh]	71.93	11.48	11.71	67.83	15.05	15.32	56.32	56.32	63.77	64.89	64.89	64.89
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.42			17.94			63.16			64.89		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	24.45											
Intersection LOS	C											
Intersection V/C	0.636											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.93	60.93	61.85	61.85
l_p,int, Pedestrian LOS Score for Intersectio	2.920	3.130	2.383	2.123
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	718	787	439	384
d_b, Bicycle Delay [s]	29.77	26.66	44.13	47.30
l_b,int, Bicycle LOS Score for Intersection	2.244	2.727	2.040	2.036
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	190	708	33	16	760	359	438	12	116	69	39	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	708	33	16	760	359	438	12	116	69	39	45
Peak Hour Factor	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	193	9	4	207	98	119	3	32	19	11	12
Total Analysis Volume [veh/h]	207	772	36	17	829	391	478	13	126	75	43	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	50	50	50	50	50	50	50	50	50	0	50	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	45	45	22	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	91	91	4	75	75	25	25	25	13	13
g / C, Green / Cycle	0.14	0.65	0.65	0.03	0.53	0.53	0.18	0.18	0.18	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.12	0.22	0.22	0.01	0.34	0.35	0.14	0.14	0.08	0.04	0.05
s, saturation flow rate [veh/h]	1781	1870	1837	1781	1870	1638	1781	1785	1556	1781	1689
c, Capacity [veh/h]	253	1210	1188	51	998	874	312	313	273	163	155
d1, Uniform Delay [s]	58.36	11.16	11.17	66.73	23.20	23.54	55.26	55.26	51.75	60.35	61.14
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	0.75	0.77	1.39	3.19	3.91	3.26	3.25	0.90	1.49	2.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.34	0.34	0.33	0.64	0.66	0.79	0.78	0.46	0.46	0.59
d, Delay for Lane Group [s/veh]	60.85	11.92	11.94	68.12	26.39	27.45	58.52	58.51	52.65	61.85	63.83
Lane Group LOS	E	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.27	5.77	5.68	0.62	15.55	14.35	8.65	8.67	4.10	2.63	3.30
50th-Percentile Queue Length [ft/ln]	181.69	144.14	142.10	15.38	388.70	358.72	216.35	216.83	102.42	65.69	82.42
95th-Percentile Queue Length [veh/ln]	11.69	9.70	9.59	1.11	22.01	20.56	13.48	13.50	7.37	4.73	5.93
95th-Percentile Queue Length [ft/ln]	292.22	242.59	239.85	27.68	550.36	514.03	336.97	337.58	184.36	118.24	148.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.85	11.93	11.94	68.12	26.63	27.45	58.51	58.51	52.65	61.85	63.83	63.83
Movement LOS	E	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	21.90			27.46			57.32			62.94		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	33.62											
Intersection LOS	C											
Intersection V/C	0.681											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.47	59.47	59.47	59.47
l_p,int, Pedestrian LOS Score for Intersectio	2.862	3.027	2.408	2.024
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	457	468
d_b, Bicycle Delay [s]	35.48	35.50	41.76	41.10
l_b,int, Bicycle LOS Score for Intersection	2.397	2.580	2.578	1.835
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	3	770	58	144	716	72	78	16	5	43	7	170
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	770	58	144	716	72	78	16	5	43	7	170
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	198	15	37	184	19	20	4	1	11	2	44
Total Analysis Volume [veh/h]	3	793	60	148	737	74	80	16	5	44	7	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing m	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	4.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	105	70	105	35	105	70	45	45	45	0	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	0	7	0	0	0	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	0	17	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	97	97	16	116	116	29	29
g / C, Green / Cycle	0.64	0.64	0.11	0.77	0.77	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.08	0.22	0.22	0.12	0.13
s, saturation flow rate [veh/h]	1865	1652	1781	1870	1801	833	1689
c, Capacity [veh/h]	1225	1064	196	1447	1394	206	359
d1, Uniform Delay [s]	12.55	12.57	64.79	4.92	4.93	57.13	56.05
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.86	1.03	5.87	0.49	0.52	3.83	3.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.38	0.76	0.28	0.29	0.49	0.63
d, Delay for Lane Group [s/veh]	13.41	13.60	70.66	5.42	5.45	60.97	59.90
Lane Group LOS	B	B	E	A	A	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.31	6.55	5.80	3.54	3.44	3.91	8.36
50th-Percentile Queue Length [ft/ln]	182.70	163.87	145.05	88.49	86.00	97.83	208.88
95th-Percentile Queue Length [veh/ln]	11.74	10.75	9.75	6.37	6.19	7.04	13.10
95th-Percentile Queue Length [ft/ln]	293.53	268.84	243.81	159.29	154.81	176.10	327.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.41	13.49	13.60	70.66	5.43	5.45	60.97	60.97	60.97	59.90	59.90	59.90
Movement LOS	B	B	B	E	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.50			15.50			60.97			59.90		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	21.53											
Intersection LOS	C											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	99.9	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	64.39	8.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.895	1.737	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	866	1332	537	537
d_b, Bicycle Delay [s]	24.14	8.36	40.20	40.12
l_b,int, Bicycle LOS Score for Intersection	2.266	2.351	1.726	1.933
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.530

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	145	518	368	550	372	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	518	368	550	372	81
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	136	97	145	98	21
Total Analysis Volume [veh/h]	153	545	387	579	392	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing m	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lag	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	35	34	34	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	39	38	38	91	53	0
Vehicle Extension [s]	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	6.1	0.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	Yes	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	4.50	8.10	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.50	6.10	0.00
g_i, Effective Green Time [s]	36	72	31	83	54
g / C, Green / Cycle	0.28	0.55	0.24	0.64	0.42
(v / s)_i Volume / Saturation Flow Rate	0.09	0.35	0.22	0.31	0.27
s, saturation flow rate [veh/h]	1781	1575	1781	1870	1797
c, Capacity [veh/h]	499	839	421	1201	752
d1, Uniform Delay [s]	36.85	21.68	48.45	12.06	29.97
k, delay calibration	0.04	0.50	0.33	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	3.89	20.64	1.39	4.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.65	0.92	0.48	0.63
d, Delay for Lane Group [s/veh]	36.98	25.57	69.09	13.45	34.03
Lane Group LOS	D	C	E	B	C
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.89	12.54	14.51	8.69	12.47
50th-Percentile Queue Length [ft/ln]	97.16	313.44	362.85	217.37	311.80
95th-Percentile Queue Length [veh/ln]	7.00	18.34	20.76	13.53	18.26
95th-Percentile Queue Length [ft/ln]	174.88	458.62	519.05	338.26	456.59

Movement, Approach, & Intersection Results

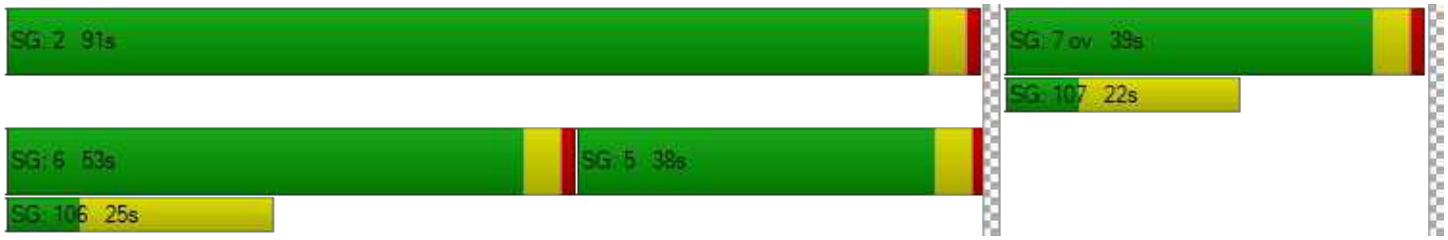
d_M, Delay for Movement [s/veh]	36.98	25.57	69.09	13.45	34.03	34.03
Movement LOS	D	C	E	B	C	C
d_A, Approach Delay [s/veh]	28.07		35.74		34.03	
Approach LOS	C		D		C	
d_I, Intersection Delay [s/veh]	32.86					
Intersection LOS	C					
Intersection V/C	0.530					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	54.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.338	2.690	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	531	1331	746
d_b, Bicycle Delay [s]	35.28	7.38	25.67
l_b,int, Bicycle LOS Score for Intersection	1.560	3.154	2.347
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	16	17	18	70	0	290	3	605	74	371	501	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	17	18	70	0	290	3	605	74	371	501	3
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	5	5	19	0	77	1	161	20	99	133	1
Total Analysis Volume [veh/h]	17	18	19	74	0	309	3	644	79	395	533	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing m	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	35	35	35	50	35	50	10	35	35	10	50	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	53	38	53	82	38	82	10	53	38	39	82	0
Vehicle Extension [s]	3.0	3.0	3.0	2.5	3.0	2.5	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	6.1	0.0	6.1	0.0	0.0	0.0	0.5	6.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		Yes	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	8.10	8.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	6.10	6.10
g_i, Effective Green Time [s]	30	30	30	30	3	61	61	32	85	85
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.02	0.47	0.47	0.25	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.06	0.20	0.00	0.18	0.05	0.22	0.14	0.14
s, saturation flow rate [veh/h]	1069	1684	1160	1536	1781	3560	1530	1781	1870	1865
c, Capacity [veh/h]	203	388	323	354	42	1678	721	442	1221	1218
d1, Uniform Delay [s]	49.01	39.31	44.21	47.73	62.05	22.17	19.11	47.19	9.14	9.15
k, delay calibration	0.11	0.11	0.11	0.26	0.04	0.50	0.50	0.36	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	0.11	0.36	14.20	0.27	0.67	0.31	18.02	0.41	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.10	0.23	0.87	0.07	0.38	0.11	0.89	0.22	0.22
d, Delay for Lane Group [s/veh]	49.18	39.42	44.57	61.93	62.32	22.84	19.42	65.21	9.56	9.56
Lane Group LOS	D	D	D	E	E	C	B	E	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.51	0.97	2.07	10.94	0.10	6.44	1.39	14.41	3.09	3.09
50th-Percentile Queue Length [ft/ln]	12.63	24.25	51.82	273.58	2.49	161.02	34.77	360.15	77.29	77.16
95th-Percentile Queue Length [veh/ln]	0.91	1.75	3.73	16.37	0.18	10.60	2.50	20.63	5.57	5.56
95th-Percentile Queue Length [ft/ln]	22.73	43.64	93.27	409.20	4.49	265.07	62.58	515.76	139.13	138.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.18	39.42	39.42	44.57	44.57	61.93	62.32	22.84	19.42	65.21	9.56	9.56
Movement LOS	D	D	D	D	D	E	E	C	B	E	A	A
d_A, Approach Delay [s/veh]	42.49			58.58			22.63			33.17		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	34.40											
Intersection LOS	C											
Intersection V/C	0.623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	54.44	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	1.971	2.242	2.936	2.774
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	516	516	746	1193
d_b, Bicycle Delay [s]	35.89	36.18	25.76	10.66
l_b,int, Bicycle LOS Score for Intersection	1.649	2.192	2.159	2.328
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	45.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.094

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	8	1	11	10	2	30	2	643	8	45	548	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	1	11	10	2	30	2	643	8	45	548	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	3	3	1	8	1	179	2	13	152	0
Total Analysis Volume [veh/h]	9	1	12	11	2	33	2	714	9	50	609	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

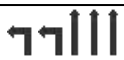
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.01	0.02	0.11	0.02	0.08	0.00	0.01	0.00	0.06	0.01	0.00
d_M, Delay for Movement [s/veh]	45.58	36.65	15.24	43.90	37.19	17.19	8.72	0.00	0.00	9.34	0.00	0.00
Movement LOS	E	E	C	E	E	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.42	0.42	0.42	0.72	0.72	0.72	0.01	0.00	0.00	0.18	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.60	10.60	10.60	18.11	18.11	18.11	0.16	0.00	0.00	4.51	0.00	0.00
d_A, Approach Delay [s/veh]	28.63			24.45			0.02			0.71		
Approach LOS	D			C			A			A		
d_I, Intersection Delay [s/veh]	1.54											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	97.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.908

Intersection Setup

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3483	95	333	1116	83	1316
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3483	95	333	1116	83	1316
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	889	24	85	285	21	336
Total Analysis Volume [veh/h]	3554	97	340	1139	85	1343
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	200
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	198.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	175	50	50	50	50	50
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	124	154	30	154	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	0	4	4
Pedestrian Clearance [s]	35	5	0	5	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	294	294	294	294	294	294
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	178	178	49	231	53	106
g / C, Green / Cycle	0.61	0.61	0.17	0.79	0.18	0.36
(v / s)_i Volume / Saturation Flow Rate	0.70	0.06	0.10	0.22	0.02	0.32
s, saturation flow rate [veh/h]	5094	1578	3459	5094	3459	4220
c, Capacity [veh/h]	3086	956	581	4003	624	1477
d1, Uniform Delay [s]	57.90	24.31	112.78	8.67	101.13	91.01
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	69.27	0.05	0.94	0.04	0.10	4.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.10	0.59	0.28	0.14	0.91
d, Delay for Lane Group [s/veh]	127.17	24.36	113.73	8.71	101.23	95.23
Lane Group LOS	F	C	F	A	F	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	93.23	2.92	12.12	6.59	2.79	33.36
50th-Percentile Queue Length [ft/ln]	2330.79	73.01	303.01	164.81	69.68	834.12
95th-Percentile Queue Length [veh/ln]	123.05	5.26	17.83	10.80	5.02	42.84
95th-Percentile Queue Length [ft/ln]	3076.22	131.42	445.75	270.07	125.43	1070.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	127.17	24.36	113.73	8.71	101.23	95.23
Movement LOS	F	C	F	A	F	F
d_A, Approach Delay [s/veh]	124.44		32.85		95.59	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	97.50					
Intersection LOS	F					
Intersection V/C	0.908					

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	139.00	0.00	138.03
l_p,int, Pedestrian LOS Score for Intersectio	3.894	0.000	3.046
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	1008	265
d_b, Bicycle Delay [s]	54.40	36.14	110.48
l_b,int, Bicycle LOS Score for Intersection	3.568	2.373	1.670
Bicycle LOS	D	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	125.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.908

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	81	31	1333	49	168	87	34	1868	248	402	853	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	31	1333	49	168	87	34	1868	248	402	853	6
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	8	347	13	44	23	9	486	65	105	222	2
Total Analysis Volume [veh/h]	84	32	1387	51	175	91	35	1944	258	418	888	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing m	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	6	15	42	4	13	13	68	40	40	68	60	60
g / C, Green / Cycle	0.06	0.14	0.42	0.04	0.13	0.13	0.67	0.39	0.39	0.67	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.33	0.03	0.11	0.06	0.03	0.63	0.27	0.27	0.17	0.00
s, saturation flow rate [veh/h]	1781	1593	4184	1781	1593	1483	1286	3097	966	1529	5094	1589
c, Capacity [veh/h]	111	231	1738	68	205	191	858	1215	379	1021	2997	935
d1, Uniform Delay [s]	47.10	38.08	25.95	48.60	43.53	41.10	6.24	31.00	25.69	17.42	10.47	8.68
k, delay calibration	0.11	0.11	0.22	0.11	0.11	0.12	0.11	0.11	0.20	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.14	0.27	1.80	15.42	9.76	2.09	0.02	270.73	3.96	0.26	0.05	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.14	0.80	0.75	0.86	0.48	0.04	1.60	0.68	0.41	0.30	0.01
d, Delay for Lane Group [s/veh]	57.24	38.35	27.75	64.02	53.29	43.19	6.26	301.72	29.65	17.69	10.53	8.68
Lane Group LOS	E	D	C	E	D	D	A	F	C	B	B	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.36	0.35	9.39	1.59	2.46	2.26	0.12	40.00	5.45	1.60	3.15	0.05
50th-Percentile Queue Length [ft/ln]	58.98	8.74	234.68	39.81	61.57	56.41	2.99	1000.04	136.34	40.09	78.84	1.34
95th-Percentile Queue Length [veh/ln]	4.25	0.63	14.41	2.87	4.43	4.06	0.22	64.24	9.28	2.89	5.68	0.10
95th-Percentile Queue Length [ft/ln]	106.17	15.73	360.29	71.65	110.83	101.54	5.38	1606.11	232.09	72.15	141.91	2.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.24	38.35	27.75	64.02	53.29	43.19	6.26	301.72	29.65	17.69	10.53	8.68
Movement LOS	E	D	C	E	D	D	A	F	C	B	B	A
d_A, Approach Delay [s/veh]	29.62			52.12			265.72			12.80		
Approach LOS	C			D			F			B		
d_I, Intersection Delay [s/veh]	125.21											
Intersection LOS	F											
Intersection V/C	0.908											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.35	0.00	42.35	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.357	0.000	3.161	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	738	606	2924	1786
d_b, Bicycle Delay [s]	20.30	24.78	10.88	0.58
l_b,int, Bicycle LOS Score for Intersection	2.800	1.821	2.790	2.281
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	320.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.540

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	124	1307	21	330	723	55	62	9	66	69	16	454
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	1307	21	330	723	55	62	9	66	69	16	454
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	341	5	86	189	14	16	2	17	18	4	119
Total Analysis Volume [veh/h]	130	1366	22	345	755	57	65	9	69	72	17	474
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			86			11			85		
v_di, Inbound Pedestrian Volume crossing m	11			85			12			86		
v_co, Outbound Pedestrian Volume crossing	13			14			14			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			14			14			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			18			7			15		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	85	79	16	79	85	32	32	32	32	32	32
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	94	78	78	94	86	86	29	29
g / C, Green / Cycle	0.72	0.60	0.60	0.72	0.66	0.66	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.83	0.83	0.77	0.49	0.50	0.44	0.73
s, saturation flow rate [veh/h]	373	837	831	450	837	809	324	767
c, Capacity [veh/h]	305	502	498	161	553	535	112	190
d1, Uniform Delay [s]	14.74	25.99	25.99	47.80	14.63	14.76	54.72	50.74
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.31	185.67	187.37	536.68	8.72	9.30	176.10	894.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	1.39	1.39	2.15	0.74	0.75	1.28	2.96
d, Delay for Lane Group [s/veh]	19.05	211.67	213.36	584.48	23.35	24.06	230.82	945.65
Lane Group LOS	B	F	F	F	C	C	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.30	39.80	39.77	25.38	8.87	8.81	9.24	53.70
50th-Percentile Queue Length [ft/ln]	32.48	994.99	994.35	634.45	221.85	220.17	230.90	1342.61
95th-Percentile Queue Length [veh/ln]	2.34	62.36	62.40	45.68	13.76	13.67	15.83	87.40
95th-Percentile Queue Length [ft/ln]	58.46	1559.05	1560.10	1142.01	343.99	341.84	395.65	2185.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.05	212.50	213.36	584.48	23.68	24.06	230.82	230.82	230.82	945.65	945.65	945.65
Movement LOS	B	F	F	F	C	C	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	195.94			190.92			230.82			945.65		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	320.54											
Intersection LOS	F											
Intersection V/C	1.540											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.29	56.29	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	3.330	3.062	1.999	2.563
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1154	443	446
d_b, Bicycle Delay [s]	9.22	11.72	39.50	39.51
l_b,int, Bicycle LOS Score for Intersection	2.812	2.514	1.796	2.489
Bicycle LOS	C	B	A	B

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	44.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.054

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	101	1381	801	99	34	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	1381	801	99	34	79
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	357	207	26	9	20
Total Analysis Volume [veh/h]	104	1428	828	102	35	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing m	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	115	95	95	30	30
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	14	122	106	106	16	16
g / C, Green / Cycle	0.09	0.84	0.73	0.73	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.90	0.56	0.58	0.04	0.09
s, saturation flow rate [veh/h]	1265	1593	837	800	994	893
c, Capacity [veh/h]	118	1342	609	583	109	98
d1, Uniform Delay [s]	64.90	11.42	12.03	12.76	59.56	63.08
k, delay calibration	0.08	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.07	43.67	8.79	10.89	0.63	7.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	1.06	0.76	0.80	0.32	0.84
d, Delay for Lane Group [s/veh]	78.97	55.09	20.82	23.65	60.18	70.11
Lane Group LOS	E	F	C	C	E	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.22	20.97	9.45	10.21	1.21	3.16
50th-Percentile Queue Length [ft/ln]	105.47	524.29	236.30	255.29	30.37	78.96
95th-Percentile Queue Length [veh/ln]	7.59	30.10	14.49	15.45	2.19	5.69
95th-Percentile Queue Length [ft/ln]	189.68	752.47	362.35	386.31	54.67	142.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.97	55.09	22.06	23.65	60.18	70.11
Movement LOS	E	F	C	C	E	E
d_A, Approach Delay [s/veh]	56.71		22.23		67.14	
Approach LOS	E		C		E	
d_I, Intersection Delay [s/veh]	44.75					
Intersection LOS	D					
Intersection V/C	1.054					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.75	63.75	61.89
l_p,int, Pedestrian LOS Score for Intersectio	2.959	2.933	2.068
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1532	1256	373
d_b, Bicycle Delay [s]	3.97	10.06	48.03
l_b,int, Bicycle LOS Score for Intersection	2.824	2.327	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	245.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.598

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1407	350	28	873	441	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1407	350	28	873	441	17
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	357	89	7	221	112	4
Total Analysis Volume [veh/h]	1427	355	28	885	447	17
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	110	110	21	124	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	108	108	16	124	21	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	112	112	5	120	18	18
g / C, Green / Cycle	0.77	0.77	0.03	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.10	0.63	0.04	0.68	0.36	0.36
s, saturation flow rate [veh/h]	1302	561	647	1293	647	641
c, Capacity [veh/h]	1008	434	21	1070	79	79
d1, Uniform Delay [s]	16.38	9.61	70.13	6.83	63.60	63.60
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	192.83	15.57	168.24	7.35	903.84	904.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.42	0.82	1.32	0.83	2.93	2.93
d, Delay for Lane Group [s/veh]	209.21	25.18	238.36	14.18	967.44	967.75
Lane Group LOS	F	C	F	B	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	39.80	7.17	1.77	6.15	22.87	22.68
50th-Percentile Queue Length [ft/ln]	994.99	179.17	44.31	153.76	571.77	566.91
95th-Percentile Queue Length [veh/ln]	64.09	11.56	3.19	10.22	38.29	37.99
95th-Percentile Queue Length [ft/ln]	1602.37	288.93	79.75	255.44	957.15	949.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	209.21	25.18	238.36	14.18	967.59	967.75
Movement LOS	F	C	F	B	F	F
d_A, Approach Delay [s/veh]	172.55		21.06		967.59	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	245.54					
Intersection LOS	F					
Intersection V/C	1.598					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	61.92
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.238
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1434	1655	246
d_b, Bicycle Delay [s]	5.81	2.16	55.85
l_b,int, Bicycle LOS Score for Intersection	3.030	2.313	2.325
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	122.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.109

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	322	1457	434	93	1118	17	44	178	305	282	159	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	322	1457	434	93	1118	17	44	178	305	282	159	68
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	388	115	25	297	5	12	47	81	75	42	18
Total Analysis Volume [veh/h]	343	1550	462	99	1189	18	47	189	324	300	169	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11			20			10			19		
v_di, Inbound Pedestrian Volume crossing m	10			19			11			20		
v_co, Outbound Pedestrian Volume crossing	3			7			7			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			7			7			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	140.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.6	3.6	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	32	29	29	37	34	34	66	33	33	31	16	16
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.6	2.6	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.60	4.60	3.00	0.00	0.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.60	2.60	1.00	0.00	0.00
g_i, Effective Green Time [s]	29	59	59	14	44	44	45	28	28	13	0	0
g / C, Green / Cycle	0.22	0.45	0.45	0.11	0.34	0.34	0.34	0.22	0.22	0.10	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.28	0.53	0.56	0.08	0.42	0.42	0.04	0.19	0.21	0.09	0.13	0.05
s, saturation flow rate [veh/h]	1216	2530	1179	1216	1874	974	1139	984	1519	3459	1329	1589
c, Capacity [veh/h]	308	1148	535	167	637	331	431	213	328	349	0	0
d1, Uniform Delay [s]	53.94	35.50	35.50	58.31	42.91	42.91	30.49	49.42	50.16	57.53	0.00	0.00
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.08	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	85.83	89.41	120.16	1.23	123.58	134.83	0.11	4.90	17.05	2.42	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.11	1.18	1.23	0.59	1.25	1.25	0.11	0.89	0.99	0.86	10000.0	10000.0
d, Delay for Lane Group [s/veh]	139.77	124.91	155.66	59.55	166.49	177.74	30.60	54.32	67.20	59.95	0.00	0.00
Lane Group LOS	F	F	F	E	F	F	C	D	E	E	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	17.42	31.49	33.92	3.30	21.14	23.02	1.06	6.24	11.90	4.98	0.00	0.00
50th-Percentile Queue Length [ft/ln]	435.49	787.19	848.05	82.58	528.58	575.53	26.47	155.90	297.49	124.40	0.00	0.00
95th-Percentile Queue Length [veh/ln]	25.74	45.60	50.04	5.95	32.57	35.17	1.91	10.33	17.56	8.63	0.00	0.00
95th-Percentile Queue Length [ft/ln]	643.39	1140.00	1250.99	148.64	814.33	879.15	47.65	258.28	438.92	215.86	0.00	0.00

Movement, Approach, & Intersection Results

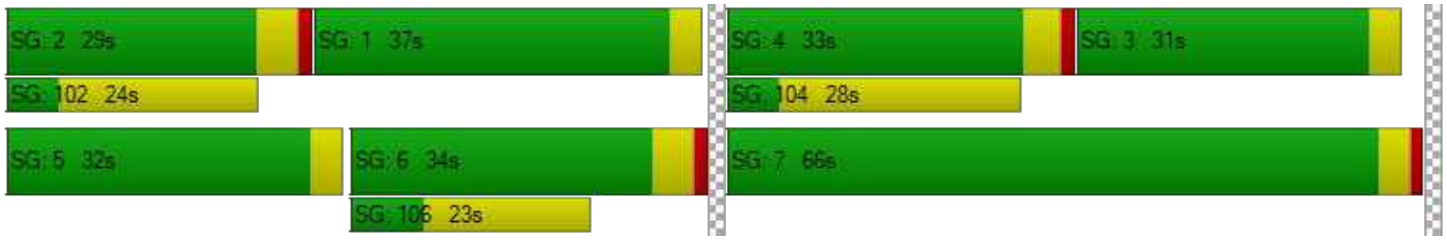
d_M, Delay for Movement [s/veh]	139.77	128.83	155.66	59.55	170.23	177.74	30.60	54.32	67.20	59.95	0.00	0.00
Movement LOS	F	F	F	E	F	F	C	D	E	E	A	A
d_A, Approach Delay [s/veh]	135.68			161.95			59.78			33.24		
Approach LOS	F			F			E			C		
d_I, Intersection Delay [s/veh]	122.32											
Intersection LOS	F											
Intersection V/C	1.109											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	12.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	53.55	54.46	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.387	3.023	2.902	2.822
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	369	446	437	0
d_b, Bicycle Delay [s]	43.21	39.33	39.78	65.00
l_b,int, Bicycle LOS Score for Intersection	2.855	2.278	2.484	2.452
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	58	1264	945	253	326	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	1264	945	253	326	54
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	339	253	68	87	14
Total Analysis Volume [veh/h]	62	1356	1014	271	350	58
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	13	100	87	87	40	40
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	31	31	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	27	21	21	11	11
g / C, Green / Cycle	0.05	0.56	0.44	0.44	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.03	0.38	0.28	0.17	0.20	0.04
s, saturation flow rate [veh/h]	1781	3560	3560	1550	1781	1566
c, Capacity [veh/h]	84	1992	1564	681	424	373
d1, Uniform Delay [s]	22.54	7.51	10.54	9.09	17.32	14.44
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.56	0.59	0.65	0.54	1.58	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.68	0.65	0.40	0.83	0.16
d, Delay for Lane Group [s/veh]	27.10	8.10	11.20	9.63	18.90	14.51
Lane Group LOS	C	A	B	A	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.73	3.41	3.22	1.52	3.34	0.44
50th-Percentile Queue Length [ft/ln]	18.36	85.28	80.44	37.99	83.49	11.08
95th-Percentile Queue Length [veh/ln]	1.32	6.14	5.79	2.73	6.01	0.80
95th-Percentile Queue Length [ft/ln]	33.04	153.51	144.80	68.37	150.28	19.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.10	8.10	11.20	9.63	18.90	14.51
Movement LOS	C	A	B	A	B	B
d_A, Approach Delay [s/veh]	8.93		10.86		18.27	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	10.96					
Intersection LOS	B					
Intersection V/C	0.750					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	14.17
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.145
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3953	3409	1498
d_b, Bicycle Delay [s]	22.92	11.91	1.51
l_b,int, Bicycle LOS Score for Intersection	2.729	2.620	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	975	4	46	733	14	37	2	7	29	1	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	975	4	46	733	14	37	2	7	29	1	44
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	260	1	12	195	4	10	1	2	8	0	12
Total Analysis Volume [veh/h]	4	1039	4	49	781	15	39	2	7	31	1	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	58	58	58	58	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	0	30	30	2	32	4	4	4	4	4
g / C, Green / Cycle	0.00	0.52	0.52	0.04	0.55	0.06	0.06	0.06	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.00	0.28	0.28	0.03	0.43	0.01	0.01	0.00	0.02	0.03
s, saturation flow rate [veh/h]	1781	1870	1867	1781	1863	1781	1789	1437	1781	1512
c, Capacity [veh/h]	8	963	961	68	1022	112	112	90	137	116
d1, Uniform Delay [s]	29.09	9.56	9.56	27.85	10.42	26.03	26.03	25.85	25.39	25.77
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	41.45	1.02	1.02	13.22	2.79	0.78	0.78	0.36	0.83	2.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.54	0.54	0.72	0.78	0.18	0.18	0.08	0.23	0.41
d, Delay for Lane Group [s/veh]	70.54	10.58	10.58	41.07	13.21	26.81	26.81	26.21	26.22	28.10
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.15	4.04	4.04	0.90	7.27	0.30	0.30	0.10	0.42	0.69
50th-Percentile Queue Length [ft/ln]	3.65	101.02	100.92	22.56	181.81	7.46	7.46	2.55	10.51	17.15
95th-Percentile Queue Length [veh/ln]	0.26	7.27	7.27	1.62	11.69	0.54	0.54	0.18	0.76	1.23
95th-Percentile Queue Length [ft/ln]	6.56	181.84	181.65	40.61	292.37	13.43	13.43	4.59	18.91	30.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.54	10.58	10.58	41.07	13.21	13.21	26.81	26.81	26.21	26.22	28.10	28.10
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.81			14.83			26.72			27.36		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	13.52											
Intersection LOS	B											
Intersection V/C	0.537											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.23	19.23	19.23	19.23
l_p,int, Pedestrian LOS Score for Intersectio	2.486	2.696	2.112	1.952
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	685	685	1028	1028
d_b, Bicycle Delay [s]	12.64	12.68	6.90	6.90
l_b,int, Bicycle LOS Score for Intersection	2.423	2.954	1.639	1.690
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	18	927	5	9	650	103	149	7	32	9	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	927	5	9	650	103	149	7	32	9	8	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	244	1	2	171	27	39	2	8	2	2	2
Total Analysis Volume [veh/h]	19	976	5	9	684	108	157	7	34	9	8	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing m	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	90	90	90	90	90	90	30	30	30	0	30	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	92	92	92	92	20	20
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.53	0.02	0.44	0.14	0.01
s, saturation flow rate [veh/h]	685	1868	573	1817	1376	1652
c, Capacity [veh/h]	443	1427	336	1387	285	318
d1, Uniform Delay [s]	11.94	7.04	16.40	5.93	48.03	42.07
k, delay calibration	0.50	0.50	0.50	0.50	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	2.72	0.15	1.71	5.52	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.69	0.03	0.57	0.70	0.08
d, Delay for Lane Group [s/veh]	12.12	9.76	16.55	7.64	53.55	42.17
Lane Group LOS	B	A	B	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.26	11.84	0.15	7.65	6.16	0.62
50th-Percentile Queue Length [ft/ln]	6.42	295.92	3.64	191.32	154.10	15.47
95th-Percentile Queue Length [veh/ln]	0.46	17.48	0.26	12.19	10.24	1.11
95th-Percentile Queue Length [ft/ln]	11.55	436.98	6.54	304.74	255.89	27.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.12	9.76	9.76	16.55	7.64	7.64	53.55	53.55	53.55	42.17	42.17	42.17
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.81			7.74			53.55			42.17		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.65											
Intersection LOS	B											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.45	49.45	49.45	49.45
l_p,int, Pedestrian LOS Score for Intersectio	2.434	2.808	1.918	1.760
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1433	432	432
d_b, Bicycle Delay [s]	4.84	4.83	36.92	36.92
l_b,int, Bicycle LOS Score for Intersection	3.210	2.881	1.886	1.599
Bicycle LOS	C	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	808	66	33	648	7	27	50	3	85	42	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	808	66	33	648	7	27	50	3	85	42	116
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	214	17	9	171	2	7	13	1	22	11	31
Total Analysis Volume [veh/h]	3	855	70	35	686	7	29	53	3	90	44	123
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing m	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	69
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	23	23	23	23	23	47	47	47	0	47	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	47	47	47	47	14	14	14	14
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.50	0.06	0.37	0.02	0.03	0.07	0.10
s, saturation flow rate [veh/h]	751	1840	604	1866	1214	1848	1342	1622
c, Capacity [veh/h]	464	1256	316	1274	191	367	291	322
d1, Uniform Delay [s]	9.42	6.98	15.48	5.52	30.51	22.88	27.42	24.73
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	3.87	0.71	1.67	0.37	0.19	0.60	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.74	0.11	0.54	0.15	0.15	0.31	0.52
d, Delay for Lane Group [s/veh]	9.45	10.85	16.19	7.19	30.88	23.07	28.02	26.03
Lane Group LOS	A	B	B	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	7.74	0.43	4.38	0.47	0.75	1.38	2.48
50th-Percentile Queue Length [ft/ln]	0.63	193.46	10.67	109.41	11.73	18.82	34.57	62.01
95th-Percentile Queue Length [veh/ln]	0.05	12.30	0.77	7.81	0.84	1.36	2.49	4.46
95th-Percentile Queue Length [ft/ln]	1.14	307.52	19.21	195.18	21.11	33.88	62.23	111.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.45	10.85	10.85	16.19	7.19	7.19	30.88	23.07	23.07	28.02	26.03	26.03
Movement LOS	A	B	B	B	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.85			7.62			25.73			26.73		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	12.35											
Intersection LOS	B											
Intersection V/C	0.674											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.39	24.39	24.39	24.39
l_p,int, Pedestrian LOS Score for Intersectio	2.516	2.510	1.968	2.088
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	548	548	1243	1243
d_b, Bicycle Delay [s]	18.34	18.31	4.96	4.96
l_b,int, Bicycle LOS Score for Intersection	3.091	2.761	1.700	1.984
Bicycle LOS	C	C	A	A

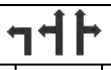
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	53.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	15	282	153	339	103	312	75	323	303	305	342	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	15	282	153	339	103	312	75	323	303	305	342	8
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	74	40	88	27	81	20	84	79	80	89	2
Total Analysis Volume [veh/h]	16	294	160	354	108	326	78	337	316	318	357	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			6			12			6		
v_di, Inbound Pedestrian Volume crossing m	12			6			12			6		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	50			19			4			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	40	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	40	0	34	34	34	0	38	0	29	29	29
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	52	52	52	22	22	22	22	22	22	22
g / C, Green / Cycle	0.18	0.18	0.18	0.37	0.37	0.37	0.16	0.16	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.11	0.13	0.13	0.21	0.04	0.13	0.13	0.13	0.13	0.12	0.13
s, saturation flow rate [veh/h]	1781	1870	1420	1781	1821	1552	1781	1870	1681	1543	1781	1832	1852
c, Capacity [veh/h]	328	345	262	662	677	577	280	294	264	242	277	285	288
d1, Uniform Delay [s]	47.04	55.32	51.84	31.75	31.71	34.79	52.08	56.96	57.14	57.03	57.11	57.09	57.11
k, delay calibration	0.11	0.12	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	6.83	2.31	1.43	1.38	3.97	0.54	5.04	6.19	7.28	5.43	5.23	5.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.85	0.61	0.35	0.34	0.56	0.28	0.80	0.82	0.83	0.80	0.80	0.80
d, Delay for Lane Group [s/veh]	47.10	62.15	54.14	33.18	33.09	38.76	52.61	61.99	63.33	64.31	62.54	62.32	62.34
Lane Group LOS	D	E	D	C	C	D	D	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.47	10.72	5.30	5.99	6.06	9.56	2.48	8.46	7.88	7.40	8.05	8.24	8.36
50th-Percentile Queue Length [ft/ln]	11.79	268.07	132.57	149.81	151.56	238.97	62.08	211.4	196.9	185.1	201.29	206.10	208.90
95th-Percentile Queue Length [veh/ln]	0.85	16.09	9.08	10.01	10.10	14.63	4.47	13.23	12.48	11.87	12.70	12.95	13.10
95th-Percentile Queue Length [ft/ln]	21.22	402.33	226.98	250.17	252.51	365.74	111.7	330.7	312.0	296.6	317.62	323.82	327.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.10	62.15	54.14	33.15	33.09	38.76	52.61	62.40	63.99	62.47	62.33	62.34
Movement LOS	D	E	D	C	C	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	58.91			35.46			62.03			62.40		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	53.74											
Intersection LOS	D											
Intersection V/C	0.661											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.55	58.55	58.55	58.55
l_p,int, Pedestrian LOS Score for Intersectio	2.313	2.762	4.319	2.586
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	510	418	475	347
d_b, Bicycle Delay [s]	39.88	44.22	40.78	48.18
l_b,int, Bicycle LOS Score for Intersection	2.335	2.860	2.988	2.123
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	61.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	89	530	59	22	410	33	190	120	36	52	112	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	530	59	22	410	33	190	120	36	52	112	25
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	146	16	6	113	9	52	33	10	14	31	7
Total Analysis Volume [veh/h]	98	582	65	24	451	36	209	132	40	57	123	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			20			20			17		
v_di, Inbound Pedestrian Volume crossing m	17			20			20			18		
v_co, Outbound Pedestrian Volume crossing	33			29			34			29		
v_ci, Inbound Pedestrian Volume crossing mi	34			29			33			29		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			5			20			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	30	60	60	30	30	30	35	35	35	35	35	35
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	84	84	10	81	81	40	46	40	46	40	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	4.10	4.10	4.00	4.00	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.10	0.00	2.00	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	75	67	75	62	57	57	36	36
g / C, Green / Cycle	0.42	0.37	0.42	0.34	0.32	0.32	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.09	0.36	0.03	0.27	0.12	0.10	0.03	0.09
s, saturation flow rate [veh/h]	1037	1812	858	1827	1781	1743	1781	1764
c, Capacity [veh/h]	275	679	145	630	561	549	355	352
d1, Uniform Delay [s]	38.52	54.70	42.64	52.64	47.83	46.84	59.59	63.04
k, delay calibration	0.11	0.32	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	18.24	0.53	8.92	1.89	1.49	0.97	3.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.95	0.17	0.77	0.37	0.31	0.16	0.43
d, Delay for Lane Group [s/veh]	39.31	72.94	43.17	61.56	49.72	48.33	60.55	66.79
Lane Group LOS	D	E	D	E	D	D	E	E
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.80	31.99	0.66	21.39	7.72	6.21	2.30	6.49
50th-Percentile Queue Length [ft/ln]	70.04	799.74	16.61	534.81	192.95	155.23	57.39	162.31
95th-Percentile Queue Length [veh/ln]	5.04	41.27	1.20	28.98	12.27	10.30	4.13	10.67
95th-Percentile Queue Length [ft/ln]	126.06	1031.63	29.91	724.44	306.85	257.40	103.31	266.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.31	72.94	72.94	43.17	61.56	61.56	49.72	48.33	48.33	60.55	66.79	66.79
Movement LOS	D	E	E	D	E	E	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	68.51			60.70			49.09			65.07		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	61.95											
Intersection LOS	E											
Intersection V/C	0.581											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	79.33	79.33	79.33	79.33
l_p,int, Pedestrian LOS Score for Intersectio	2.438	2.360	2.179	2.151
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	881	848	460	393
d_b, Bicycle Delay [s]	28.18	29.95	53.90	58.28
l_b,int, Bicycle LOS Score for Intersection	2.789	2.403	2.188	1.901
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	337	86	19	223	33	92	152	15	20	132	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	337	86	19	223	33	92	152	15	20	132	26
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	94	24	5	62	9	26	42	4	6	37	7
Total Analysis Volume [veh/h]	23	376	96	21	249	37	103	170	17	22	147	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			2			9			3		
v_di, Inbound Pedestrian Volume crossing m	9			3			9			2		
v_co, Outbound Pedestrian Volume crossing	7			1			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			12			20			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	46	46	46	46
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	16	16	10	8
g / C, Green / Cycle	0.35	0.35	0.21	0.17
(v / s)_i Volume / Saturation Flow Rate	0.28	0.17	0.16	0.11
s, saturation flow rate [veh/h]	1758	1807	1819	1813
c, Capacity [veh/h]	705	724	381	301
d1, Uniform Delay [s]	13.27	11.52	17.10	17.96
k, delay calibration	0.11	0.11	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.28	0.39	3.14	1.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.42	0.76	0.66
d, Delay for Lane Group [s/veh]	14.55	11.92	20.24	19.78
Lane Group LOS	B	B	C	B
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	4.06	2.13	2.89	1.87
50th-Percentile Queue Length [ft/ln]	101.52	53.30	72.21	46.78
95th-Percentile Queue Length [veh/ln]	7.31	3.84	5.20	3.37
95th-Percentile Queue Length [ft/ln]	182.74	95.93	129.97	84.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.55	14.55	14.55	11.92	11.92	11.92	20.24	20.24	20.24	19.78	19.78	19.78
Movement LOS	B	B	B	B	B	B	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	14.55			11.92			20.24			19.78		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	16.01											
Intersection LOS	B											
Intersection V/C	0.603											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.23	14.79	13.23	13.23
l_p,int, Pedestrian LOS Score for Intersectio	2.032	1.974	1.931	1.917
Crosswalk LOS	B	A	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1310	1310	1310	1310
d_b, Bicycle Delay [s]	2.75	2.75	2.76	2.74
l_b,int, Bicycle LOS Score for Intersection	2.376	2.066	2.038	1.886
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	30.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.179

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	16	13	33	115	3	204	29	1480	112	147	1086	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.40	0.00	1.50	1.20	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	13	33	115	3	204	29	1480	112	147	1086	12
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	9	30	1	53	8	388	29	39	285	3
Total Analysis Volume [veh/h]	17	14	35	121	3	214	30	1551	117	154	1138	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			14			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	30	0	0	30	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	27	0	0	27	0	15	58	0	25	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	21	6	62	62	11	67	67
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.05	0.56	0.56	0.10	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.19	0.02	3.51	0.14	0.02	0.43	0.07	0.09	0.21	0.21
s, saturation flow rate [veh/h]	162	1590	35	1574	1810	3578	1568	1788	3583	1870
c, Capacity [veh/h]	82	304	71	301	99	2003	878	185	2181	1138
d1, Uniform Delay [s]	38.27	36.77	54.71	41.54	48.97	9.76	6.42	46.47	4.63	4.63
k, delay calibration	0.20	0.11	0.50	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.36	0.17	382.53	3.11	1.69	2.99	0.32	9.29	0.44	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.12	1.74	0.71	0.30	0.77	0.13	0.83	0.35	0.35
d, Delay for Lane Group [s/veh]	43.63	36.94	437.25	44.65	50.67	12.76	6.73	55.76	5.07	5.47
Lane Group LOS	D	D	F	D	D	B	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.83	0.82	9.57	5.65	0.82	7.97	0.82	4.44	1.97	2.18
50th-Percentile Queue Length [ft/ln]	20.77	20.48	239.19	141.35	20.60	199.36	20.45	110.88	49.21	54.56
95th-Percentile Queue Length [veh/ln]	1.50	1.47	17.22	9.55	1.48	12.61	1.47	7.89	3.54	3.93
95th-Percentile Queue Length [ft/ln]	37.39	36.87	430.54	238.85	37.08	315.14	36.82	197.22	88.58	98.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.63	43.63	36.94	437.25	437.25	44.65	50.67	12.76	6.73	55.76	5.20	5.47
Movement LOS	D	D	D	F	F	D	D	B	A	E	A	A
d_A, Approach Delay [s/veh]	40.08			188.68			13.01			11.17		
Approach LOS	D			F			B			B		
d_I, Intersection Delay [s/veh]	30.26											
Intersection LOS	C											
Intersection V/C	4.179											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.54	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.968	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	382	382	927	1109
d_b, Bicycle Delay [s]	36.05	36.05	15.93	10.92
l_b,int, Bicycle LOS Score for Intersection	1.669	2.117	2.960	2.277
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	294	149	99	51	209	49	121	1345	53	56	886	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	294	149	99	51	209	49	121	1345	53	56	886	153
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	39	26	13	55	13	32	354	14	15	233	40
Total Analysis Volume [veh/h]	310	157	104	54	220	52	128	1417	56	59	934	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			1			9			2		
v_di, Inbound Pedestrian Volume crossing m	9			2			8			1		
v_co, Outbound Pedestrian Volume crossing	1			5			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			5			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			5			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	35	0	0	35	0	20	70	0	20	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	29	29	29	24	24	24	13	84	84	8	79	79
g / C, Green / Cycle	0.18	0.18	0.18	0.15	0.15	0.15	0.08	0.53	0.53	0.05	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.07	0.03	0.12	0.03	0.07	0.40	0.04	0.03	0.26	0.10
s, saturation flow rate [veh/h]	1781	1839	1515	1781	1870	1550	1781	3560	1540	1781	3560	1544
c, Capacity [veh/h]	319	329	271	271	285	236	150	1873	810	84	1744	756
d1, Uniform Delay [s]	61.99	61.99	57.77	59.36	65.23	59.51	70.12	17.38	11.60	73.94	18.08	15.31
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.07	2.97	0.89	0.36	4.42	0.46	12.47	2.91	0.16	9.94	1.18	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.72	0.38	0.20	0.77	0.22	0.85	0.76	0.07	0.70	0.54	0.21
d, Delay for Lane Group [s/veh]	65.06	64.95	58.66	59.71	69.66	59.97	82.58	20.29	11.76	83.87	19.26	15.96
Lane Group LOS	E	E	E	E	E	E	F	C	B	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.15	9.43	3.81	1.98	9.09	1.92	5.54	14.44	0.68	2.60	8.57	2.46
50th-Percentile Queue Length [ft/ln]	228.72	235.68	95.24	49.48	227.31	47.88	138.51	361.09	17.05	65.08	214.22	61.38
95th-Percentile Queue Length [veh/ln]	14.11	14.46	6.86	3.56	14.04	3.45	9.40	20.68	1.23	4.69	13.37	4.42
95th-Percentile Queue Length [ft/ln]	352.73	361.56	171.43	89.07	350.94	86.19	235.01	516.91	30.69	117.14	334.23	110.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.03	64.95	58.66	59.71	69.66	59.97	82.58	20.29	11.76	83.87	19.26	15.96
Movement LOS	E	E	E	E	E	E	F	C	B	F	B	B
d_A, Approach Delay [s/veh]	63.85			66.46			24.97			22.10		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	33.85											
Intersection LOS	C											
Intersection V/C	0.695											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	72.26	72.26	72.26
l_p,int, Pedestrian LOS Score for Intersectio	2.423	2.282	2.992	2.958
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	356	784	779
d_b, Bicycle Delay [s]	54.26	54.23	29.64	29.96
l_b,int, Bicycle LOS Score for Intersection	2.502	2.098	2.880	2.512
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	121	257	107	127	203	57	74	1303	99	85	928	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	257	107	127	203	57	74	1303	99	85	928	50
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	66	28	33	52	15	19	335	25	22	239	13
Total Analysis Volume [veh/h]	124	264	110	131	209	59	76	1341	102	87	955	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	6			0			0			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			0			0			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	10			10			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	20	40	0	20	40	0	21	83	0	18	79	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	28	28	14	26	26	9	92	92	10	93	93
g / C, Green / Cycle	0.10	0.17	0.17	0.09	0.16	0.16	0.05	0.57	0.57	0.06	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.07	0.14	0.07	0.07	0.11	0.04	0.04	0.38	0.07	0.05	0.27	0.03
s, saturation flow rate [veh/h]	1781	1870	1550	1781	1870	1548	1781	3560	1554	1781	3560	1537
c, Capacity [veh/h]	179	326	270	152	299	247	96	2037	889	108	2061	889
d1, Uniform Delay [s]	69.71	63.58	58.66	72.32	63.69	58.75	72.05	1.78	1.61	72.72	9.45	7.85
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.78	4.79	0.98	12.97	2.97	0.49	13.49	1.69	0.26	13.01	0.75	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.81	0.41	0.86	0.70	0.24	0.79	0.66	0.11	0.81	0.46	0.06
d, Delay for Lane Group [s/veh]	74.49	68.36	59.64	85.29	66.65	59.24	85.54	3.46	1.88	85.73	10.20	7.97
Lane Group LOS	E	E	E	F	E	E	F	A	A	F	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	10.91	4.10	5.92	8.41	2.16	3.35	1.67	0.24	3.87	4.99	0.47
50th-Percentile Queue Length [ft/ln]	130.46	272.75	102.53	148.09	210.37	54.02	83.77	41.82	6.02	96.76	124.80	11.86
95th-Percentile Queue Length [veh/ln]	8.96	16.33	7.38	9.92	13.17	3.89	6.03	3.01	0.43	6.97	8.66	0.85
95th-Percentile Queue Length [ft/ln]	224.12	408.18	184.56	247.88	329.30	97.24	150.79	75.28	10.83	174.17	216.40	21.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.49	68.36	59.64	85.29	66.65	59.24	85.54	3.46	1.88	85.73	10.20	7.97
Movement LOS	E	E	E	F	E	E	F	A	A	F	B	A
d_A, Approach Delay [s/veh]	67.96			71.67			7.46			16.11		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	26.04											
Intersection LOS	C											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.329	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	942	892
d_b, Bicycle Delay [s]	51.20	51.20	22.46	24.65
l_b,int, Bicycle LOS Score for Intersection	2.381	2.218	2.813	2.461
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	7.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	56	21	77	47	30	50	0	1433	42	0	1036	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	21	77	47	30	50	0	1433	42	0	1036	83
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9500	0.9560	0.9560	0.9500	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	5	20	12	8	13	0	375	11	0	271	22
Total Analysis Volume [veh/h]	59	22	81	49	31	52	0	1499	44	0	1084	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			14			13			0		
v_di, Inbound Pedestrian Volume crossing m	0			13			14			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			12			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	35	0	0	30	0	0	95	0	0	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	13	13	13	13	13	120	120	120	120
g / C, Green / Cycle	0.08	0.08	0.08	0.08	0.08	0.75	0.75	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.05	0.03	0.05	0.42	0.03	0.30	0.05
s, saturation flow rate [veh/h]	1781	1870	1511	1781	1634	3560	1527	3560	1589
c, Capacity [veh/h]	148	156	126	148	136	2674	1147	2674	1194
d1, Uniform Delay [s]	69.55	68.05	70.86	69.18	70.88	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.72	0.41	5.39	1.29	4.39	0.85	0.06	0.46	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.14	0.64	0.33	0.61	0.56	0.04	0.41	0.07
d, Delay for Lane Group [s/veh]	71.27	68.46	76.25	70.47	75.27	0.85	0.06	0.46	0.12
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.38	0.86	3.42	1.97	3.50	0.32	0.02	0.17	0.04
50th-Percentile Queue Length [ft/ln]	59.56	21.53	85.54	49.34	87.45	7.94	0.50	4.25	0.98
95th-Percentile Queue Length [veh/ln]	4.29	1.55	6.16	3.55	6.30	0.57	0.04	0.31	0.07
95th-Percentile Queue Length [ft/ln]	107.21	38.75	153.98	88.81	157.42	14.29	0.90	7.66	1.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.27	68.46	76.25	70.47	75.27	75.27	0.00	0.85	0.06	0.00	0.46	0.12
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	73.38			73.49			0.83			0.43		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.77											
Intersection LOS	A											
Intersection V/C	0.539											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.21	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.023	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	280	1092	1092
d_b, Bicycle Delay [s]	54.85	59.54	16.51	16.48
l_b,int, Bicycle LOS Score for Intersection	1.827	1.777	2.833	2.526
Bicycle LOS	A	A	C	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	48	286	118	341	209	58	176	1349	540	134	1001	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	286	118	341	209	58	176	1349	540	134	1001	45
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	75	31	90	55	15	46	355	142	35	263	12
Total Analysis Volume [veh/h]	50	301	124	359	220	61	185	1419	568	141	1053	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			18			0			19		
v_di, Inbound Pedestrian Volume crossing m	0			19			0			18		
v_co, Outbound Pedestrian Volume crossing	16			6			6			15		
v_ci, Inbound Pedestrian Volume crossing mi	15			6			6			16		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	13			14			5			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.2	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.20	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.20	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	23	23	28	28	28	17	70	70	16	69	69
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.47	0.47	0.10	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.13	0.14	0.10	0.12	0.04	0.10	0.40	0.37	0.08	0.30	0.03
s, saturation flow rate [veh/h]	1851	1677	3459	1870	1454	1781	3560	1555	1781	3560	1536
c, Capacity [veh/h]	286	259	647	350	272	201	1663	726	185	1627	702
d1, Uniform Delay [s]	61.87	62.24	55.41	56.28	51.64	63.20	24.21	22.42	60.34	12.22	9.86
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.83	4.08	0.28	0.70	0.15	7.06	5.79	8.22	2.43	2.00	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.89	0.55	0.63	0.22	0.92	0.85	0.78	0.76	0.65	0.07
d, Delay for Lane Group [s/veh]	64.70	66.32	55.68	56.97	51.79	70.26	30.01	30.64	62.77	14.22	10.04
Lane Group LOS	E	E	E	E	D	E	C	C	E	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.34	8.93	6.24	7.81	1.98	7.12	18.87	14.22	4.94	5.64	0.44
50th-Percentile Queue Length [ft/ln]	233.61	223.28	156.03	195.16	49.51	177.94	471.68	355.47	123.43	140.89	11.10
95th-Percentile Queue Length [veh/ln]	14.36	13.83	10.34	12.39	3.56	11.49	25.99	20.40	8.58	9.53	0.80
95th-Percentile Queue Length [ft/ln]	358.95	345.81	258.46	309.71	89.12	287.32	649.77	510.07	214.53	238.22	19.97

Movement, Approach, & Intersection Results

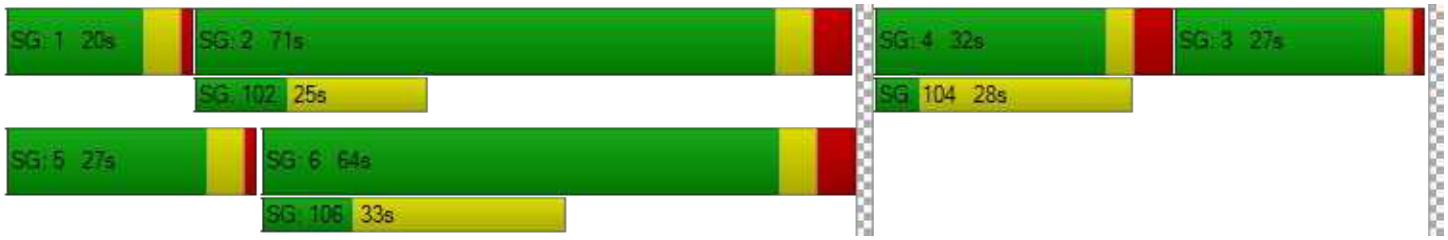
d_M, Delay for Movement [s/veh]	64.70	65.27	66.32	55.68	56.97	51.79	70.26	30.01	30.64	62.77	14.22	10.04
Movement LOS	E	E	E	E	E	D	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	65.49			55.76			33.60			19.58		
Approach LOS	E			E			C			B		
d_I, Intersection Delay [s/veh]	36.23											
Intersection LOS	D											
Intersection V/C	0.753											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.73	61.73	0.00	66.34
l_p,int, Pedestrian LOS Score for Intersectio	2.264	2.744	0.000	3.004
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	306	333	745	838
d_b, Bicycle Delay [s]	54.19	52.52	29.65	25.35
l_b,int, Bicycle LOS Score for Intersection	1.951	2.616	3.352	2.583
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	9.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.541

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	57	10	36	40	15	94	51	1740	10	103	1315	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	10	36	40	15	94	51	1740	10	103	1315	38
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	3	9	10	4	25	13	456	3	27	345	10
Total Analysis Volume [veh/h]	60	10	38	42	16	99	54	1826	10	108	1380	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			4			5		
v_di, Inbound Pedestrian Volume crossing m	5			4			4			6		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			16			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	36	36	36	36	36	36	29	95	95	29	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	24	9	114	114	12	117	117
g / C, Green / Cycle	0.15	0.15	0.15	0.06	0.72	0.72	0.07	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.11	0.05	0.06	0.03	0.34	0.34	0.06	0.26	0.26
s, saturation flow rate [veh/h]	1001	1247	1533	1781	3560	1864	1781	3560	1838
c, Capacity [veh/h]	184	225	229	101	2546	1333	129	2602	1343
d1, Uniform Delay [s]	68.09	60.52	61.76	71.87	1.16	1.16	71.33	0.57	0.57
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.94	0.60	1.29	4.28	0.63	1.21	13.02	0.39	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.26	0.43	0.53	0.47	0.47	0.84	0.36	0.36
d, Delay for Lane Group [s/veh]	71.03	61.12	63.06	76.15	1.80	2.37	84.35	0.96	1.33
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.49	2.20	3.84	2.24	1.21	1.48	4.73	0.54	0.69
50th-Percentile Queue Length [ft/ln]	112.20	55.04	96.06	55.92	30.20	36.96	118.19	13.45	17.33
95th-Percentile Queue Length [veh/ln]	7.96	3.96	6.92	4.03	2.17	2.66	8.29	0.97	1.25
95th-Percentile Queue Length [ft/ln]	199.06	99.07	172.92	100.65	54.36	66.53	207.34	24.21	31.19

Movement, Approach, & Intersection Results

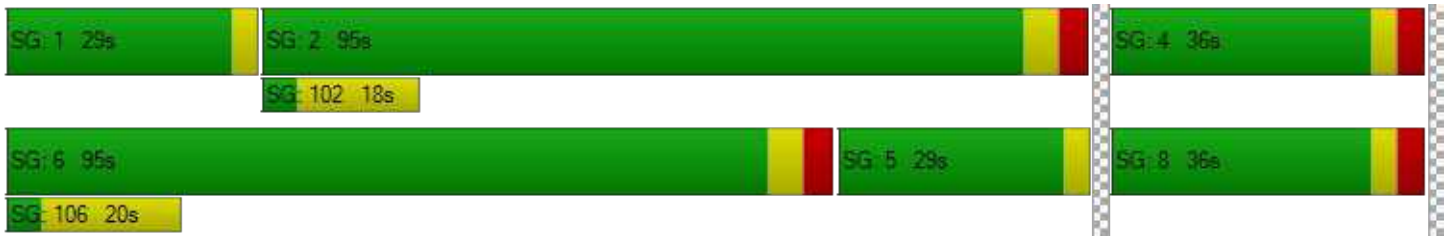
d_M, Delay for Movement [s/veh]	71.03	71.03	71.03	61.12	61.12	63.06	76.15	1.99	2.37	84.35	1.08	1.33
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	71.03			62.34			4.11			6.97		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	9.74											
Intersection LOS	A											
Intersection V/C	0.541											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.832	2.015	0.000	0.000
Crosswalk LOS	A	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	1099	1099
d_b, Bicycle Delay [s]	53.05	53.24	16.29	16.25
l_b,int, Bicycle LOS Score for Intersection	1.738	1.819	2.599	2.400
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	238	0	183	0	1	3	270	1688	1	2	1208	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	238	0	183	0	1	3	270	1688	1	2	1208	124
Peak Hour Factor	0.9520	0.9900	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	0	48	0	0	1	71	443	0	1	317	33
Total Analysis Volume [veh/h]	250	0	192	0	1	3	284	1773	1	2	1269	130
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			7			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	5	0	0	10	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	41	41	0	0	41	0	55	85	0	34	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	35	35	35	35	28	114	114	0	87	87
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.17	0.71	0.71	0.00	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.18	0.12	0.00	0.00	0.16	0.33	0.33	0.00	0.26	0.26
s, saturation flow rate [veh/h]	1412	1592	1191	1651	1781	3560	1869	1781	3560	1770
c, Capacity [veh/h]	333	350	162	363	307	2545	1336	4	1939	964
d1, Uniform Delay [s]	61.61	55.40	0.00	48.83	60.57	1.17	1.17	79.64	12.38	12.41
k, delay calibration	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	1.34	0.00	0.01	11.53	0.59	1.13	61.56	0.86	1.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.55	0.00	0.01	0.92	0.46	0.46	0.46	0.48	0.48
d, Delay for Lane Group [s/veh]	66.35	56.74	0.00	48.85	72.11	1.77	2.30	141.20	13.24	14.15
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.30	7.07	0.00	0.13	11.94	1.21	1.47	0.16	6.00	6.26
50th-Percentile Queue Length [ft/ln]	257.57	176.69	0.00	3.22	298.52	30.33	36.82	3.91	149.94	156.58
95th-Percentile Queue Length [veh/ln]	15.57	11.43	0.00	0.23	17.61	2.18	2.65	0.28	10.01	10.37
95th-Percentile Queue Length [ft/ln]	389.17	285.69	0.00	5.79	440.19	54.59	66.27	7.04	250.34	259.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.35	56.74	56.74	0.00	48.85	48.85	72.11	1.95	2.30	141.20	13.48	14.15
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	62.17			48.85			11.63			13.73		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	18.14											
Intersection LOS	B											
Intersection V/C	0.640											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.971	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	437	974	711
d_b, Bicycle Delay [s]	48.88	48.83	21.14	33.29
l_b,int, Bicycle LOS Score for Intersection	2.289	1.566	2.692	2.330
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.450

Intersection Setup

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	22	0	35	1	1	1	150	1973	2	25	1412	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	0	35	1	1	1	150	1973	2	25	1412	12
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	9	0	0	0	40	521	1	7	373	3
Total Analysis Volume [veh/h]	23	0	37	1	1	1	158	2083	2	26	1491	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			17			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	40	0	0	40	0	35	105	0	15	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	16	132	132	3	118	118
g / C, Green / Cycle	0.08	0.08	0.08	0.10	0.82	0.82	0.02	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.00	0.09	0.38	0.38	0.01	0.28	0.28
s, saturation flow rate [veh/h]	1469	1589	1635	1781	3560	1869	1781	3560	1861
c, Capacity [veh/h]	168	133	167	180	2927	1536	34	2634	1377
d1, Uniform Delay [s]	68.04	68.76	67.27	68.21	0.00	0.00	77.62	0.29	0.29
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.12	0.04	12.41	0.54	1.02	29.20	0.41	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.28	0.02	0.88	0.47	0.47	0.77	0.37	0.38
d, Delay for Lane Group [s/veh]	68.40	69.88	67.32	80.62	0.54	1.02	106.82	0.70	1.07
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.90	1.48	0.12	6.77	0.22	0.44	1.34	0.36	0.52
50th-Percentile Queue Length [ft/ln]	22.61	37.09	2.94	169.21	5.47	10.91	33.43	9.05	13.04
95th-Percentile Queue Length [veh/ln]	1.63	2.67	0.21	11.04	0.39	0.79	2.41	0.65	0.94
95th-Percentile Queue Length [ft/ln]	40.69	66.77	5.30	275.88	9.84	19.65	60.18	16.29	23.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.40	68.40	69.88	67.32	67.32	67.32	80.62	0.70	1.02	106.82	0.82	1.07
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.31			67.32			6.33			2.63		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.89											
Intersection LOS	A											
Intersection V/C	0.450											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.032	1.751	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	412	412	1225	975
d_b, Bicycle Delay [s]	50.41	50.41	12.12	21.03
l_b,int, Bicycle LOS Score for Intersection	1.659	1.565	2.793	2.401
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	11.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	301	317	107	360	336	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.90	0.50	2.30	0.00	0.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	301	317	107	360	336	90
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	91	31	103	96	26
Total Analysis Volume [veh/h]	345	364	123	413	385	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	15		0		16	
v_ci, Inbound Pedestrian Volume crossing mi	16		0		15	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		15		8	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	10	10	3	18	10	10
g / C, Green / Cycle	0.29	0.29	0.09	0.50	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.19	0.23	0.07	0.22	0.21	0.07
s, saturation flow rate [veh/h]	1861	1551	1802	1865	1810	1558
c, Capacity [veh/h]	543	453	162	927	494	425
d1, Uniform Delay [s]	10.97	11.56	15.85	5.80	11.97	10.07
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	1.29	2.73	0.13	1.02	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.80	0.76	0.45	0.78	0.24
d, Delay for Lane Group [s/veh]	11.43	12.85	18.58	5.92	12.99	10.17
Lane Group LOS	B	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.81	2.10	0.96	1.26	2.24	0.49
50th-Percentile Queue Length [ft/ln]	45.24	52.41	23.96	31.46	56.01	12.14
95th-Percentile Queue Length [veh/ln]	3.26	3.77	1.73	2.26	4.03	0.87
95th-Percentile Queue Length [ft/ln]	81.43	94.34	43.13	56.62	100.82	21.85

Movement, Approach, & Intersection Results

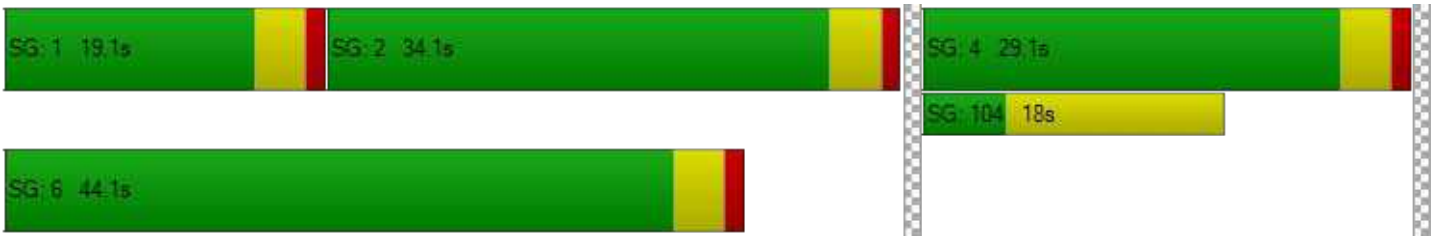
d_M, Delay for Movement [s/veh]	11.43	12.85	18.58	5.92	12.99	10.17
Movement LOS	B	B	B	A	B	B
d_A, Approach Delay [s/veh]	12.16		8.83		12.39	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.19					
Intersection LOS	B					
Intersection V/C	0.581					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	9.91	1.31
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.156	2.125
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1688	2251	1407
d_b, Bicycle Delay [s]	0.43	0.28	1.57
l_b,int, Bicycle LOS Score for Intersection	2.729	2.444	1.560
Bicycle LOS	B	B	A

Sequence

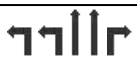
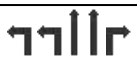
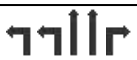
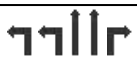
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Sand Hill Rd/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	41.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	308	521	144	327	958	158	269	750	252	118	562	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	308	521	144	327	958	158	269	750	252	118	562	172
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	137	38	86	252	42	71	197	66	31	148	45
Total Analysis Volume [veh/h]	324	548	151	344	1007	166	283	789	265	124	591	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			6			6			0		
v_di, Inbound Pedestrian Volume crossing m	0			6			6			1		
v_co, Outbound Pedestrian Volume crossing	2			1			3			2		
v_ci, Inbound Pedestrian Volume crossing mi	3			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			9			33			20		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	8	8	4	8	8	8	8	8	8	8	8
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	20	44	44	20	44	44	20	40	40	16	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.6	3.6	2.0	3.6	3.6	2.1	3.6	3.6	2.1	3.6	3.6
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.60	5.60	4.00	5.60	5.60	4.10	5.60	5.60	4.10	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.60	3.60	2.00	3.60	3.60	2.10	3.60	3.60	2.10	3.60	3.60
g_i, Effective Green Time [s]	13	49	49	14	49	49	12	30	30	8	26	26
g / C, Green / Cycle	0.11	0.41	0.41	0.12	0.41	0.41	0.10	0.25	0.25	0.07	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.15	0.10	0.10	0.28	0.11	0.08	0.22	0.18	0.04	0.17	0.12
s, saturation flow rate [veh/h]	3459	3560	1540	3459	3560	1559	3459	3560	1503	3459	3560	1536
c, Capacity [veh/h]	387	1440	623	406	1460	639	347	894	377	230	773	333
d1, Uniform Delay [s]	52.30	25.19	23.55	51.96	29.15	23.35	52.97	43.30	40.45	54.32	44.16	41.56
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.87	0.77	0.92	4.92	2.69	0.98	4.69	3.09	2.80	1.97	1.61	1.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.38	0.24	0.85	0.69	0.26	0.82	0.88	0.70	0.54	0.76	0.54
d, Delay for Lane Group [s/veh]	57.17	25.96	24.47	56.88	31.84	24.33	57.66	46.39	43.24	56.29	45.76	42.93
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.00	5.57	2.95	5.31	12.16	3.24	4.37	11.47	7.25	1.87	8.32	4.83
50th-Percentile Queue Length [ft/ln]	125.09	139.29	73.78	132.71	303.95	81.02	109.33	286.75	181.24	46.66	208.12	120.67
95th-Percentile Queue Length [veh/ln]	8.67	9.44	5.31	9.09	17.88	5.83	7.80	17.02	11.67	3.36	13.06	8.43
95th-Percentile Queue Length [ft/ln]	216.81	236.07	132.81	227.18	446.91	145.84	195.07	425.61	291.63	83.98	326.41	210.75

Movement, Approach, & Intersection Results

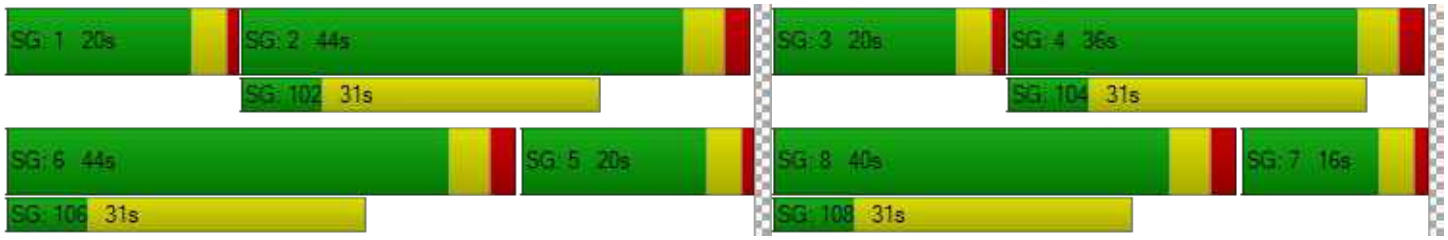
d_M, Delay for Movement [s/veh]	57.17	25.96	24.47	56.88	31.84	24.33	57.66	46.39	43.24	56.29	45.76	42.93
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	35.62			36.70			48.15			46.65		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.54											
Intersection LOS	D											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.55	49.55	49.55	49.55
l_p,int, Pedestrian LOS Score for Intersectio	3.013	3.088	3.001	2.961
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	573	506
d_b, Bicycle Delay [s]	28.18	27.91	31.08	33.83
l_b,int, Bicycle LOS Score for Intersection	2.404	2.811	2.663	2.299
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	164	17	227	0	6	23	6	0	2	93	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	164	17	227	0	6	23	6	0	2	93	121
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	44	5	61	0	2	6	2	0	1	25	32
Total Analysis Volume [veh/h]	0	176	18	244	0	6	25	6	0	2	100	130
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	699	586	664
Degree of Utilization, x	0.63	0.06	0.35

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.43	0.20	1.57
95th-Percentile Queue Length [ft]	110.75	5.04	39.16
Approach Delay [s/veh]	16.38	9.56	11.31
Approach LOS	C	A	B
Intersection Delay [s/veh]	14.08		
Intersection LOS	B		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	133	125	8	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	125	8	0	0	0	0	0
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	34	2	0	0	0	0	0
Total Analysis Volume [veh/h]	143	134	9	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	629	574
Degree of Utilization, x	0.45	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.37	0.00
95th-Percentile Queue Length [ft]	59.25	0.00
Approach Delay [s/veh]	13.40	0.00
Approach LOS	B	A
Intersection Delay [s/veh]	14.08	
Intersection LOS	B	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	60	339	106	43	430	67	121	19	45	53	30	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	339	106	43	430	67	121	19	45	53	30	58
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	99	31	13	125	19	35	6	13	15	9	17
Total Analysis Volume [veh/h]	70	394	123	50	500	78	141	22	52	62	35	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			5			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	0			6			0			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	11			7			1			8		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	19	25	19	12	12	12
g / C, Green / Cycle	0.55	0.42	0.55	0.41	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.29	0.05	0.32	0.21	0.05	0.06
s, saturation flow rate [veh/h]	1001	1780	1024	1819	1035	1326	1639
c, Capacity [veh/h]	561	751	595	748	391	161	414
d1, Uniform Delay [s]	6.62	10.81	6.05	11.65	17.31	13.76	13.66
k, delay calibration	0.23	0.23	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	2.41	0.06	3.65	1.20	1.50	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.69	0.08	0.77	0.55	0.38	0.25
d, Delay for Lane Group [s/veh]	6.83	13.22	6.11	15.30	18.51	15.26	13.97
Lane Group LOS	A	B	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.22	3.62	0.15	4.49	2.08	0.52	0.78
50th-Percentile Queue Length [ft/ln]	5.62	90.44	3.63	112.31	52.00	13.06	19.48
95th-Percentile Queue Length [veh/ln]	0.40	6.51	0.26	7.97	3.74	0.94	1.40
95th-Percentile Queue Length [ft/ln]	10.11	162.79	6.54	199.21	93.60	23.51	35.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.83	13.22	13.22	6.11	15.30	15.30	18.51	18.51	18.51	15.26	13.97	13.97
Movement LOS	A	B	B	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.46			14.57			18.51			14.46		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.31											
Intersection LOS	B											
Intersection V/C	0.599											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	-4.0	0.0	-5.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	27.11	0.00	28.20
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.449	0.000	2.067
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1308	1308	1308	1308
d_b, Bicycle Delay [s]	2.76	2.75	2.74	2.75
l_b,int, Bicycle LOS Score for Intersection	2.528	2.596	1.914	1.830
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	329	706	425	583	614	139
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	329	706	425	583	614	139
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	180	108	149	157	35
Total Analysis Volume [veh/h]	336	720	434	595	627	142
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	29		41		20	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	10	7	10	8	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	38	48	44	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	31	31	31	58	94	27	27
g / C, Green / Cycle	0.24	0.24	0.24	0.45	0.72	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.19	0.24	0.38	0.18	0.09
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1564	3560	1536
c, Capacity [veh/h]	431	453	453	798	1128	731	315
d1, Uniform Delay [s]	46.03	46.25	46.25	26.19	8.05	49.83	45.08
k, delay calibration	0.13	0.14	0.14	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.81	4.21	4.21	2.66	1.77	3.06	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.80	0.80	0.54	0.53	0.86	0.45
d, Delay for Lane Group [s/veh]	49.84	50.46	50.46	28.85	9.82	52.89	46.09
Lane Group LOS	D	D	D	C	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.60	11.45	11.45	10.36	7.36	10.14	4.11
50th-Percentile Queue Length [ft/ln]	265.07	286.33	286.33	259.05	184.11	253.42	102.87
95th-Percentile Queue Length [veh/ln]	15.94	17.00	17.00	15.64	11.82	15.36	7.41
95th-Percentile Queue Length [ft/ln]	398.57	425.08	425.08	391.03	295.38	383.95	185.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.84	50.46	28.85	9.82	52.89	46.09
Movement LOS	D	D	C	A	D	D
d_A, Approach Delay [s/veh]	50.27		17.85		51.64	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	38.95					
Intersection LOS	D					
Intersection V/C	0.708					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	521	601
d_b, Bicycle Delay [s]	29.28	36.27	32.11
l_b,int, Bicycle LOS Score for Intersection	2.431	1.560	2.194
Bicycle LOS	B	A	B

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road/101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

Intersection Setup

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	2093	0	0	979	605	318
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2093	0	0	979	605	318
Peak Hour Factor	0.9550	1.0000	1.0000	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	548	0	0	256	158	83
Total Analysis Volume [veh/h]	2192	0	0	1025	634	333
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	100	0	0	100	100	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	70	0	0	70	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	Yes	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	68	68	28	28
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.62	0.29	0.18	0.12
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2401	2401	971	790
d1, Uniform Delay [s]	13.83	7.47	31.73	29.39
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.72	0.56	3.41	1.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.43	0.65	0.42
d, Delay for Lane Group [s/veh]	20.56	8.02	35.14	31.04
Lane Group LOS	C	A	D	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.82	4.62	7.11	3.42
50th-Percentile Queue Length [ft/ln]	495.45	115.55	177.68	85.38
95th-Percentile Queue Length [veh/ln]	27.12	8.15	11.48	6.15
95th-Percentile Queue Length [ft/ln]	677.97	203.69	286.98	153.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.56	0.00	0.00	8.02	35.14	31.04
Movement LOS	C			A	D	C
d_A, Approach Delay [s/veh]	20.56		8.02		33.73	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	20.53					
Intersection LOS	C					
Intersection V/C	0.859					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	41.46	39.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.003	2.372
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	515
d_b, Bicycle Delay [s]	6.02	6.04	27.58
l_b,int, Bicycle LOS Score for Intersection	3.368	2.405	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	23.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	378	192	21	20	118	332	11	70	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	378	192	21	20	118	332	11	70	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	103	52	6	5	32	90	3	19	2
Total Analysis Volume [veh/h]	10	193	16	410	208	23	22	128	360	12	76	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	441	474	483	524	487	545	446
Degree of Utilization, x	0.02	0.44	0.85	0.44	0.31	0.66	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.07	2.22	8.64	2.23	1.29	4.83	0.80
95th-Percentile Queue Length [ft]	1.74	55.47	216.04	55.75	32.34	120.68	19.92
Approach Delay [s/veh]	15.92		30.54		18.90		13.23
Approach LOS	C		D		C		B
Intersection Delay [s/veh]	23.18						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1173	364	0	790	605	0	0	0	677	0	345
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1173	364	0	790	605	0	0	0	677	0	345
Peak Hour Factor	1.0000	0.9520	0.9520	1.0000	0.9520	0.9520	1.0000	1.0000	1.0000	0.9520	1.0000	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	308	96	0	207	159	0	0	0	178	0	91
Total Analysis Volume [veh/h]	0	1232	382	0	830	636	0	0	0	711	0	362
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	112	0	0	112	0	0	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	108	108	108		29	29
g / C, Green / Cycle	0.74	0.74	0.74		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.24	0.16	0.41		0.21	0.13
s, saturation flow rate [veh/h]	5094	5094	1550		3459	2813
c, Capacity [veh/h]	3794	3794	1154		692	563
d1, Uniform Delay [s]	6.22	5.64	7.86		57.93	53.18
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.23	0.13	1.90		23.55	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.22	0.55		1.03	0.64
d, Delay for Lane Group [s/veh]	6.45	5.77	9.76		81.48	54.42
Lane Group LOS	A	A	A		F	D
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.08	2.49	8.44		14.94	6.19
50th-Percentile Queue Length [ft/ln]	102.06	62.22	211.05		373.47	154.67
95th-Percentile Queue Length [veh/ln]	7.35	4.48	13.21		21.60	10.27
95th-Percentile Queue Length [ft/ln]	183.71	112.00	330.17		539.96	256.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.45	0.00	0.00	5.77	9.76	0.00	0.00	0.00	81.48	0.00	54.42
Movement LOS		A			A	A				F		D
d_A, Approach Delay [s/veh]	4.98			7.50			0.00			72.35		
Approach LOS	A			A			A			E		
d_I, Intersection Delay [s/veh]	25.13											
Intersection LOS	C											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.74	0.00	63.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.955	0.000	1.447	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1491	1491	0	400
d_b, Bicycle Delay [s]	4.70	4.72	72.46	46.36
l_b,int, Bicycle LOS Score for Intersection	2.237	2.366	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	95.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

Intersection Setup

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1276	628	0	1032	597	0	0	0	269	0	849
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1276	628	0	1032	597	0	0	0	269	0	849
Peak Hour Factor	1.0000	0.9330	0.9330	1.0000	0.9330	0.9330	1.0000	1.0000	1.0000	0.9330	1.0000	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	342	168	0	277	160	0	0	0	72	0	227
Total Analysis Volume [veh/h]	0	1368	673	0	1106	640	0	0	0	288	0	910
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	2.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	95	0	0	95	0	0	0	0	25	0	25
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	91	91	116		21	46
g / C, Green / Cycle	0.63	0.63	0.80		0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.46	0.43	0.37		0.08	0.55
s, saturation flow rate [veh/h]	3003	1556	3003		3459	1658
c, Capacity [veh/h]	1886	977	2401		502	525
d1, Uniform Delay [s]	18.40	17.37	4.60		57.76	49.51
k, delay calibration	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	2.47	3.96	0.64		1.04	337.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.69	0.46		0.57	1.73
d, Delay for Lane Group [s/veh]	20.87	21.33	5.24		58.80	387.25
Lane Group LOS	C	C	A		E	F
Critical Lane Group	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	10.56	15.19	3.16		5.03	34.09
50th-Percentile Queue Length [ft/ln]	264.08	379.86	79.04		125.68	852.30
95th-Percentile Queue Length [veh/ln]	15.89	21.59	5.69		8.70	55.79
95th-Percentile Queue Length [ft/ln]	397.34	539.67	142.27		217.60	1394.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.87	21.33	0.00	5.24	0.00	0.00	0.00	0.00	58.80	0.00	387.25
Movement LOS		C	C		A					E		F
d_A, Approach Delay [s/veh]	21.02			3.40			0.00			308.29		
Approach LOS	C			A			A			F		
d_I, Intersection Delay [s/veh]	95.74											
Intersection LOS	F											
Intersection V/C	0.665											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	63.75	63.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.089	1.447	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1601	0	290
d_b, Bicycle Delay [s]	10.05	2.90	72.47	52.99
l_b,int, Bicycle LOS Score for Intersection	2.682	2.168	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.393

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	15	252	58	114	145	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	252	58	114	145	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	68	16	31	39	2
Total Analysis Volume [veh/h]	16	274	63	124	158	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	635	697	804	688
Degree of Utilization, x	0.03	0.39	0.23	0.24

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	1.88	0.90	0.94
95th-Percentile Queue Length [ft]	1.94	46.98	22.48	23.51
Approach Delay [s/veh]	11.04		8.83	9.89
Approach LOS	B		A	A
Intersection Delay [s/veh]	10.10			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	608	0	0	400	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	608	0	0	400	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	0	0	100	0	0
Total Analysis Volume [veh/h]	608	0	0	400	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.71	0.00	18.51	12.26
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		15.38	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	608	0	0	400	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	608	0	0	400	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	0	0	100	0	0
Total Analysis Volume [veh/h]	608	0	0	400	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.71	0.00	18.51	12.26
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		15.38	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	All-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.325

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	27	159	36	11	165	9	37	97	10	3	88	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	159	36	11	165	9	37	97	10	3	88	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	43	10	3	45	2	10	26	3	1	24	3
Total Analysis Volume [veh/h]	29	173	39	12	179	10	40	105	11	3	96	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	741	726	690	689
Degree of Utilization, x	0.33	0.28	0.23	0.16

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.41	1.13	0.87	0.57
95th-Percentile Queue Length [ft]	35.34	28.25	21.65	14.30
Approach Delay [s/veh]	10.18	9.85	9.74	9.23
Approach LOS	B	A	A	A
Intersection Delay [s/veh]	9.84			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.364

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	203	61	37	181	78	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	61	37	181	78	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	17	10	50	22	13
Total Analysis Volume [veh/h]	226	68	41	201	87	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	808	770	712
Degree of Utilization, x	0.36	0.31	0.20

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.67	1.35	0.72
95th-Percentile Queue Length [ft]	41.85	33.71	18.01
Approach Delay [s/veh]	9.99	9.81	9.28
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.78		
Intersection LOS	A		

Intersection Level Of Service Report
Intersection 292: Ravesnwood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	40.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	4	591	7	5	420	5	11	5	16	5	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	591	7	5	420	5	11	5	16	5	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	159	2	1	113	1	3	1	4	1	0	5
Total Analysis Volume [veh/h]	4	635	8	5	452	5	12	5	17	5	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.78	0.01	0.04	0.55	0.00	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	32.37	24.55	23.49	39.97	16.11	15.07	7.27	0.00	0.00	7.27	0.00	0.00
Movement LOS	D	C	C	E	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	8.43	8.43	8.43	4.05	4.05	4.05	0.02	0.02	0.02	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	210.76	210.76	210.76	101.18	101.18	101.18	0.58	0.58	0.58	0.25	0.25	0.25
d_A, Approach Delay [s/veh]	24.58			16.36			2.57			1.51		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	20.21											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	55	2	35	5	0	2	12	198	4	3	122	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	2	35	5	0	2	12	198	4	3	122	24
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	1	11	2	0	1	4	60	1	1	37	7
Total Analysis Volume [veh/h]	67	2	43	6	0	2	15	241	5	4	149	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	743	704	810	811
Degree of Utilization, x	0.15	0.01	0.32	0.22

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.53	0.03	1.40	0.86
95th-Percentile Queue Length [ft]	13.21	0.86	34.95	21.48
Approach Delay [s/veh]	8.70	8.17	9.54	8.72
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.09			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	308	0	0	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	308	0	0	177
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	77	0	0	44
Total Analysis Volume [veh/h]	0	0	308	0	0	177
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.65	9.92	0.00	0.00	7.87	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.79		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.351

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	308	0	0	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	308	0	0	177
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	77	0	0	44
Total Analysis Volume [veh/h]	0	0	308	0	0	177
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	726	877	853
Degree of Utilization, x	0.00	0.35	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	1.59	0.78
95th-Percentile Queue Length [ft]	0.00	39.71	19.47
Approach Delay [s/veh]	0.00	9.31	8.33
Approach LOS	A	A	A
Intersection Delay [s/veh]	8.95		
Intersection LOS	A		

Vistro File:
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Report File: P:\...\BPPM.pdf

Scenario 18 Near-Term (2027) Plus Project PM

11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Left	0.785	23.2	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	NEB Left	0.641	24.3	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	SB Left	0.703	34.1	C
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.509	21.9	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.741	61.9	E
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NEB Left	0.798	85.2	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	1.839	809.2	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NEB Thru	0.919	101.5	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	EB Thru	0.919	125.4	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	WB Right	1.579	328.7	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.095	54.6	D
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Right	1.650	257.4	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.162	218.9	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	NEB Left	0.867	14.2	B
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.590	14.4	B
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.892	19.6	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	SB Left	0.869	24.8	C

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	SEB Left	0.794	61.7	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SWB Thru	0.674	75.1	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.632	17.5	B
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	6.802	36.3	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	SEB Left	0.729	35.7	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.668	26.2	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.548	7.7	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NWB Left	0.808	41.9	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.550	9.4	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.671	18.1	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.460	5.7	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.601	11.7	B
39	Sand Hill Rd/Santa Cruz Ave	Signalized	HCM 7th Edition	NWB Left	0.693	41.9	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	NB Right	0.770	18.5	C
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Left	0.613	14.6	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	NEB Thru	0.722	39.3	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 7th Edition	NWB Left	0.863	20.8	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	SWB Left	0.919	27.3	D
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.692	24.0	C
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.706	93.1	F

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.401	10.4	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.282	32.7	D
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Right	0.004	12.9	B
254	Laurel Street and Glenwood Ave	All-way stop	HCM 7th Edition	NEB Thru	0.349	10.5	B
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.429	10.8	B
292	Ravesnwood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SWB Left	0.550	328.2	F
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.383	9.6	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SWB Left	0.026	12.6	B
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.397	9.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1036	950	279	1533	555
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1036	950	279	1533	555
Peak Hour Factor	1.0000	0.9720	0.9720	1.0000	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	266	244	70	394	143
Total Analysis Volume [veh/h]	0	1066	977	279	1577	571
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	100	100	0	100	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	40	40	0	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	5	0
Pedestrian Clearance [s]	0	12	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	48	45	48	48
g / C, Green / Cycle	0.48	0.45	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.46	0.36
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	1901	1617	1659	763
d1, Uniform Delay [s]	18.79	20.54	24.90	21.14
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.20	1.68	1.55	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.60	0.95	0.75
d, Delay for Lane Group [s/veh]	19.99	22.23	26.45	21.70
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.65	8.49	17.14	10.44
50th-Percentile Queue Length [ft/ln]	216.24	212.26	428.57	260.97
95th-Percentile Queue Length [veh/ln]	13.47	13.27	23.93	15.74
95th-Percentile Queue Length [ft/ln]	336.82	331.72	598.33	393.44

Movement, Approach, & Intersection Results

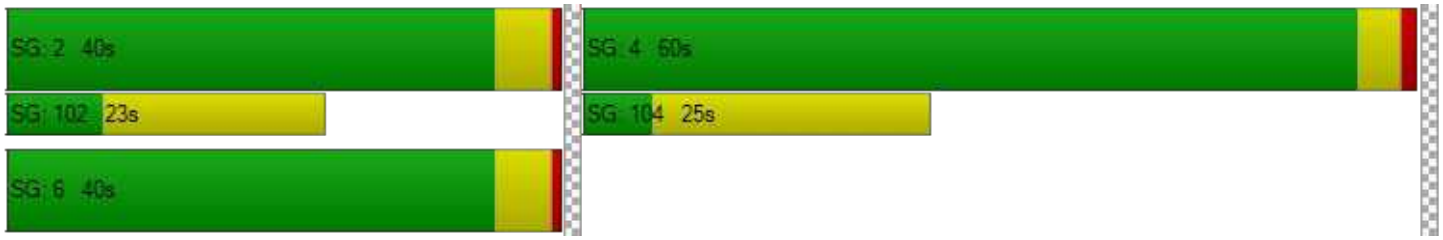
d_M, Delay for Movement [s/veh]	0.00	19.99	22.23	0.00	26.45	21.70
Movement LOS		B	C		C	C
d_A, Approach Delay [s/veh]	19.99		22.23		25.19	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	23.18					
Intersection LOS	C					
Intersection V/C	0.785					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.43	0.00	39.63
l_p,int, Pedestrian LOS Score for Intersectio	2.881	0.000	2.643
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1117
d_b, Bicycle Delay [s]	20.95	20.90	9.74
l_b,int, Bicycle LOS Score for Intersection	2.439	2.366	1.560
Bicycle LOS	B	B	A

Sequence

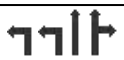
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	39	1232	2	73	1058	246	15	8	257	272	5	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1232	2	73	1058	246	15	8	257	272	5	2
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	320	1	19	275	64	4	2	67	71	1	1
Total Analysis Volume [veh/h]	40	1279	2	76	1099	255	16	8	267	282	5	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	57	0	20	62	0	0	36	0	0	32	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	145	145	145	145	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	95	95	7	96	96	18	18	17	17
g / C, Green / Cycle	0.04	0.66	0.66	0.05	0.66	0.66	0.13	0.13	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.02	0.37	0.38	0.01	0.09	0.08	0.08
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1734	1810	2813	1781	1781
c, Capacity [veh/h]	76	2338	1227	165	1237	1148	226	351	205	205
d1, Uniform Delay [s]	67.83	11.17	11.17	67.09	13.18	13.37	56.17	61.24	61.64	61.64
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.10	0.43	0.82	0.74	1.84	2.10	0.15	2.54	3.25	3.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.36	0.36	0.46	0.56	0.57	0.11	0.76	0.70	0.70
d, Delay for Lane Group [s/veh]	71.93	11.60	11.99	67.83	15.02	15.46	56.32	63.77	64.89	64.89
Lane Group LOS	E	B	B	E	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	6.03	6.46	1.39	12.25	11.85	0.80	4.92	5.37	5.37
50th-Percentile Queue Length [ft/ln]	38.40	150.81	161.60	34.63	306.20	296.31	20.03	123.12	134.13	134.13
95th-Percentile Queue Length [veh/ln]	2.76	10.06	10.63	2.49	17.99	17.50	1.44	8.56	9.16	9.16
95th-Percentile Queue Length [ft/ln]	69.12	251.51	265.84	62.33	449.68	437.46	36.05	214.11	229.10	229.09

Movement, Approach, & Intersection Results

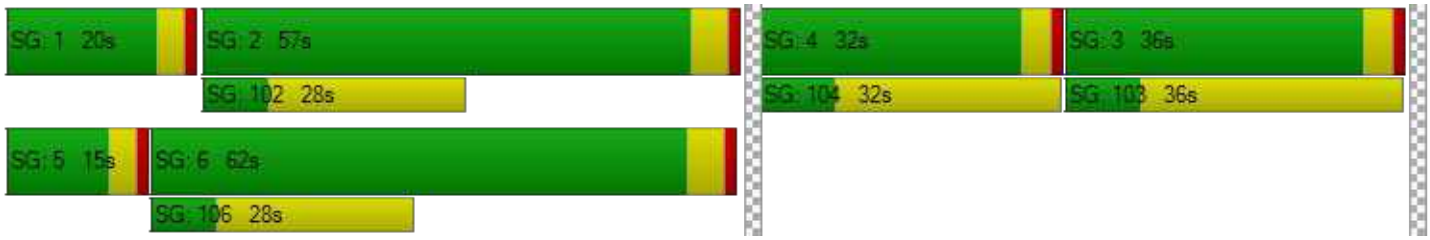
d_M, Delay for Movement [s/veh]	71.93	11.73	11.99	67.83	15.18	15.46	56.32	56.32	63.77	64.89	64.89	64.89
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.55			18.03			63.16			64.89		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	24.26											
Intersection LOS	C											
Intersection V/C	0.641											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.93	60.93	61.85	61.85
l_p,int, Pedestrian LOS Score for Intersectio	2.937	3.145	2.383	2.123
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	718	787	439	384
d_b, Bicycle Delay [s]	29.77	26.66	44.13	47.30
l_b,int, Bicycle LOS Score for Intersection	2.286	2.739	2.040	2.036
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.703

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	219	782	33	16	774	359	438	12	125	69	39	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	782	33	16	774	359	438	12	125	69	39	45
Peak Hour Factor	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	213	9	4	211	98	119	3	34	19	11	12
Total Analysis Volume [veh/h]	239	853	36	17	844	391	478	13	136	75	43	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	50	50	50	50	50	50	50	50	50	0	50	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	45	45	22	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	91	91	4	75	75	25	25	25	13	13
g / C, Green / Cycle	0.14	0.65	0.65	0.03	0.53	0.53	0.18	0.18	0.18	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.24	0.01	0.35	0.36	0.14	0.14	0.09	0.04	0.05
s, saturation flow rate [veh/h]	1781	1870	1840	1781	1870	1641	1781	1785	1556	1781	1689
c, Capacity [veh/h]	255	1210	1190	51	996	874	313	313	273	163	155
d1, Uniform Delay [s]	59.42	11.49	11.50	66.73	23.46	23.82	55.23	55.23	52.09	60.35	61.14
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.83	0.87	0.89	1.39	3.32	4.08	3.25	3.24	1.04	1.49	2.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.37	0.37	0.33	0.65	0.67	0.78	0.78	0.50	0.46	0.59
d, Delay for Lane Group [s/veh]	66.26	12.36	12.39	68.12	26.77	27.90	58.48	58.47	53.13	61.85	63.83
Lane Group LOS	E	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.83	6.53	6.45	0.62	15.89	14.70	8.65	8.67	4.46	2.63	3.30
50th-Percentile Queue Length [ft/ln]	220.75	163.22	161.21	15.38	397.15	367.62	216.28	216.75	111.40	65.69	82.42
95th-Percentile Queue Length [veh/ln]	13.70	10.72	10.61	1.11	22.42	20.99	13.47	13.50	7.92	4.73	5.93
95th-Percentile Queue Length [ft/ln]	342.59	267.98	265.32	27.68	560.56	524.85	336.87	337.48	197.95	118.24	148.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.26	12.38	12.39	68.12	27.03	27.90	58.47	58.47	53.13	61.85	63.83	63.83
Movement LOS	E	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	23.79			27.86			57.31			62.94		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	34.08											
Intersection LOS	C											
Intersection V/C	0.703											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.47	59.47	59.47	59.47
l_p,int, Pedestrian LOS Score for Intersectio	2.888	3.043	2.416	2.024
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	457	468
d_b, Bicycle Delay [s]	35.48	35.50	41.76	41.10
l_b,int, Bicycle LOS Score for Intersection	2.490	2.593	2.594	1.835
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	3	863	58	147	737	72	78	16	5	43	7	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	863	58	147	737	72	78	16	5	43	7	181
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	222	15	38	190	19	20	4	1	11	2	47
Total Analysis Volume [veh/h]	3	889	60	151	759	74	80	16	5	44	7	186
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing m	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	4.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	105	70	105	35	105	70	45	45	45	0	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	0	7	0	0	0	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	0	17	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	96	96	17	115	115	30	30
g / C, Green / Cycle	0.64	0.64	0.11	0.77	0.77	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.08	0.23	0.23	0.13	0.14
s, saturation flow rate [veh/h]	1865	1657	1781	1870	1803	804	1694
c, Capacity [veh/h]	1213	1056	199	1438	1386	204	368
d1, Uniform Delay [s]	13.48	13.51	64.66	5.17	5.18	56.85	55.80
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.05	1.25	5.89	0.52	0.54	3.92	4.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.42	0.76	0.29	0.30	0.49	0.64
d, Delay for Lane Group [s/veh]	14.53	14.76	70.56	5.69	5.72	60.77	59.98
Lane Group LOS	B	B	E	A	A	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.62	7.75	5.92	3.77	3.67	3.92	8.79
50th-Percentile Queue Length [ft/ln]	215.47	193.71	147.95	94.31	91.72	98.02	219.80
95th-Percentile Queue Length [veh/ln]	13.43	12.31	9.91	6.79	6.60	7.06	13.65
95th-Percentile Queue Length [ft/ln]	335.84	307.84	247.70	169.75	165.10	176.43	341.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.53	14.63	14.76	70.56	5.71	5.72	60.77	60.77	60.77	59.98	59.98	59.98
Movement LOS	B	B	B	E	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	14.64			15.66			60.77			59.98		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	21.86											
Intersection LOS	C											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	99.9	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	64.39	8.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.925	1.737	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	866	1332	537	537
d_b, Bicycle Delay [s]	24.14	8.36	40.20	40.12
l_b,int, Bicycle LOS Score for Intersection	2.345	2.371	1.726	1.951
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	61.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	174	531	556	790	396	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	174	531	556	790	396	89
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	140	146	208	104	23
Total Analysis Volume [veh/h]	183	559	585	832	417	94
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing m	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lag	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	35	34	34	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	39	38	38	91	53	0
Vehicle Extension [s]	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	6.1	0.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	Yes	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	4.50	8.10	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.50	6.10	0.00
g_i, Effective Green Time [s]	36	74	33	84	52
g / C, Green / Cycle	0.28	0.57	0.26	0.64	0.40
(v / s)_i Volume / Saturation Flow Rate	0.10	0.35	0.33	0.44	0.28
s, saturation flow rate [veh/h]	1781	1576	1781	1870	1795
c, Capacity [veh/h]	498	871	459	1202	714
d1, Uniform Delay [s]	37.63	20.09	48.27	14.94	32.98
k, delay calibration	0.04	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	3.62	139.90	3.29	6.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.64	1.28	0.69	0.72
d, Delay for Lane Group [s/veh]	37.80	23.71	188.17	18.22	39.06
Lane Group LOS	D	C	F	B	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.74	12.33	32.47	15.76	14.52
50th-Percentile Queue Length [ft/ln]	118.60	308.24	811.87	394.00	363.06
95th-Percentile Queue Length [veh/ln]	8.32	18.09	47.76	22.27	20.77
95th-Percentile Queue Length [ft/ln]	207.90	452.20	1193.90	556.76	519.30

Movement, Approach, & Intersection Results

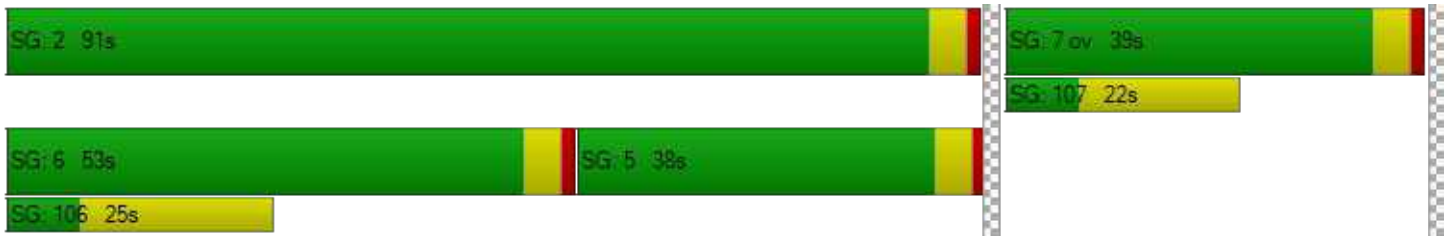
d_M, Delay for Movement [s/veh]	37.80	23.71	188.17	18.22	39.06	39.06
Movement LOS	D	C	F	B	D	D
d_A, Approach Delay [s/veh]	27.19		88.38		39.06	
Approach LOS	C		F		D	
d_I, Intersection Delay [s/veh]	61.94					
Intersection LOS	E					
Intersection V/C	0.741					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	54.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.420	2.829	0.000
Crosswalk LOS	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	531	1331	746
d_b, Bicycle Delay [s]	35.28	7.38	25.67
l_b,int, Bicycle LOS Score for Intersection	1.560	3.898	2.403
Bicycle LOS	A	D	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	85.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	335	100	88	70	17	293	59	711	74	371	523	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	335	100	88	70	17	293	59	711	74	371	523	18
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	27	23	19	5	78	16	189	20	99	139	5
Total Analysis Volume [veh/h]	356	106	94	74	18	312	63	756	79	395	556	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing m	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	35	35	35	50	35	50	10	35	35	10	50	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	53	38	53	82	38	82	10	53	38	39	82	0
Vehicle Extension [s]	3.0	3.0	3.0	2.5	3.0	2.5	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	6.1	0.0	6.1	0.0	0.0	0.0	0.5	6.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		Yes	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	8.10	8.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	6.10	6.10
g_i, Effective Green Time [s]	40	40	40	40	8	51	51	32	70	70
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.06	0.39	0.39	0.25	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.34	0.12	0.11	0.20	0.04	0.21	0.05	0.22	0.15	0.16
s, saturation flow rate [veh/h]	1050	1703	861	1545	1781	3560	1525	1781	1870	1842
c, Capacity [veh/h]	201	528	317	479	110	1393	596	443	1000	985
d1, Uniform Delay [s]	58.44	35.03	42.64	38.47	59.34	30.58	25.35	47.17	16.62	16.63
k, delay calibration	0.50	0.11	0.11	0.26	0.04	0.50	0.50	0.36	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	365.15	0.45	0.50	3.58	1.76	1.52	0.46	17.86	0.73	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.77	0.38	0.29	0.65	0.57	0.54	0.13	0.89	0.29	0.29
d, Delay for Lane Group [s/veh]	423.59	35.48	43.14	42.04	61.10	32.11	25.81	65.03	17.35	17.38
Lane Group LOS	F	D	D	D	E	C	C	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	27.20	5.16	2.59	9.03	2.06	9.34	1.64	14.39	4.88	4.83
50th-Percentile Queue Length [ft/ln]	680.06	129.06	64.65	225.79	51.59	233.58	41.09	359.75	121.89	120.63
95th-Percentile Queue Length [veh/ln]	45.55	8.89	4.66	13.96	3.71	14.36	2.96	20.61	8.50	8.43
95th-Percentile Queue Length [ft/ln]	1138.86	222.21	116.38	349.01	92.87	358.91	73.97	515.28	212.42	210.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	423.59	35.48	35.48	43.14	43.14	42.04	61.10	32.11	25.81	65.03	17.36	17.38
Movement LOS	F	D	D	D	D	D	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	283.98			42.29			33.59			36.77		
Approach LOS	F			D			C			D		
d_I, Intersection Delay [s/veh]	85.15											
Intersection LOS	F											
Intersection V/C	0.798											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.46	54.46	54.46	54.46
l_p,int, Pedestrian LOS Score for Intersectio	2.100	2.278	2.980	3.369
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	746	1192
d_b, Bicycle Delay [s]	35.90	36.19	25.78	10.67
l_b,int, Bicycle LOS Score for Intersection	2.477	2.226	2.300	2.360
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	809.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.839

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	109	1	292	10	2	30	22	703	8	45	630	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	1	292	10	2	30	22	703	8	45	630	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	0	81	3	1	8	6	195	2	13	175	3
Total Analysis Volume [veh/h]	121	1	324	11	2	33	24	781	9	50	700	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.84	0.01	0.74	0.59	0.02	0.08	0.03	0.01	0.00	0.06	0.01	0.00
d_M, Delay for Movement [s/veh]	809.16	793.94	762.70	274.03	121.82	91.63	9.16	0.00	0.00	9.61	0.00	0.00
Movement LOS	F	F	F	F	F	F	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	38.58	38.58	38.58	3.06	3.06	3.06	0.08	0.00	0.00	0.19	0.00	0.00
95th-Percentile Queue Length [ft/ln]	964.61	964.61	964.61	76.51	76.51	76.51	2.08	0.00	0.00	4.80	0.00	0.00
d_A, Approach Delay [s/veh]	775.37			136.56			0.27			0.63		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	170.68											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	101.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.919

Intersection Setup

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3532	95	333	1130	83	1316
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3532	95	333	1130	83	1316
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	901	24	85	288	21	336
Total Analysis Volume [veh/h]	3604	97	340	1153	85	1343
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	200
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	198.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	175	50	50	50	50	50
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	124	154	30	154	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	0	4	4
Pedestrian Clearance [s]	35	5	0	5	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	294	294	294	294	294	294
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	178	178	49	231	53	106
g / C, Green / Cycle	0.61	0.61	0.17	0.79	0.18	0.36
(v / s)_i Volume / Saturation Flow Rate	0.71	0.06	0.10	0.23	0.02	0.32
s, saturation flow rate [veh/h]	5094	1578	3459	5094	3459	4220
c, Capacity [veh/h]	3086	956	581	4003	624	1477
d1, Uniform Delay [s]	57.90	24.31	112.78	8.70	101.13	91.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	76.48	0.05	0.94	0.04	0.10	4.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.17	0.10	0.59	0.29	0.14	0.91
d, Delay for Lane Group [s/veh]	134.39	24.36	113.73	8.74	101.23	95.23
Lane Group LOS	F	C	F	A	F	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	95.29	2.92	12.12	6.70	2.79	33.37
50th-Percentile Queue Length [ft/ln]	2382.34	73.01	303.01	167.42	69.68	834.13
95th-Percentile Queue Length [veh/ln]	126.88	5.26	17.83	10.94	5.02	42.84
95th-Percentile Queue Length [ft/ln]	3171.95	131.42	445.75	273.53	125.43	1070.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	134.39	24.36	113.73	8.74	101.23	95.23
Movement LOS	F	C	F	A	F	F
d_A, Approach Delay [s/veh]	131.50		32.65		95.59	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	101.47					
Intersection LOS	F					
Intersection V/C	0.919					

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	139.00	0.00	138.03
l_p,int, Pedestrian LOS Score for Intersectio	3.910	0.000	3.046
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	1008	265
d_b, Bicycle Delay [s]	54.40	36.14	110.48
l_b,int, Bicycle LOS Score for Intersection	3.595	2.381	1.670
Bicycle LOS	D	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	125.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.919

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	81	41	1382	49	171	87	34	1868	248	416	853	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	41	1382	49	171	87	34	1868	248	416	853	6
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	11	360	13	44	23	9	486	65	108	222	2
Total Analysis Volume [veh/h]	84	43	1438	51	178	91	35	1944	258	433	888	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing m	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	6	15	43	4	13	13	68	40	40	68	60	60
g / C, Green / Cycle	0.06	0.15	0.42	0.04	0.13	0.13	0.66	0.39	0.39	0.66	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.34	0.03	0.11	0.06	0.03	0.63	0.27	0.28	0.17	0.00
s, saturation flow rate [veh/h]	1781	1593	4184	1781	1593	1484	1285	3097	966	1536	5094	1589
c, Capacity [veh/h]	110	233	1749	67	207	193	856	1209	377	1024	2994	934
d1, Uniform Delay [s]	47.34	38.38	26.30	48.85	43.67	41.14	6.31	31.25	25.98	17.99	10.55	8.75
k, delay calibration	0.11	0.11	0.25	0.11	0.11	0.12	0.11	0.11	0.20	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.21	0.38	2.27	15.62	9.85	2.03	0.02	274.24	4.09	0.28	0.05	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.18	0.82	0.76	0.86	0.47	0.04	1.61	0.68	0.42	0.30	0.01
d, Delay for Lane Group [s/veh]	57.54	38.76	28.57	64.48	53.51	43.17	6.33	305.49	30.07	18.27	10.61	8.75
Lane Group LOS	E	D	C	E	D	D	A	F	C	B	B	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.37	0.48	9.97	1.60	2.52	2.26	0.12	40.27	5.52	1.69	3.18	0.05
50th-Percentile Queue Length [ft/ln]	59.33	11.88	249.34	40.07	62.97	56.56	3.02	1006.69	137.90	42.21	79.54	1.35
95th-Percentile Queue Length [veh/ln]	4.27	0.86	15.15	2.89	4.53	4.07	0.22	64.71	9.37	3.04	5.73	0.10
95th-Percentile Queue Length [ft/ln]	106.79	21.38	378.82	72.13	113.35	101.81	5.44	1617.66	234.19	75.98	143.17	2.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.54	38.76	28.57	64.48	53.51	43.17	6.33	305.49	30.07	18.27	10.61	8.75
Movement LOS	E	D	C	E	D	D	A	F	C	B	B	A
d_A, Approach Delay [s/veh]	30.40			52.32			269.04			13.10		
Approach LOS	C			D			F			B		
d_I, Intersection Delay [s/veh]	125.45											
Intersection LOS	F											
Intersection V/C	0.919											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.61	0.00	42.61	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.371	0.000	3.162	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	734	603	2909	1777
d_b, Bicycle Delay [s]	20.53	25.02	10.58	0.64
l_b,int, Bicycle LOS Score for Intersection	2.851	1.824	2.790	2.289
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	328.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.579

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	124	1366	21	330	740	55	62	9	66	69	16	454
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	1366	21	330	740	55	62	9	66	69	16	454
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	357	5	86	193	14	16	2	17	18	4	119
Total Analysis Volume [veh/h]	130	1427	22	345	773	57	65	9	69	72	17	474
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			86			11			85		
v_di, Inbound Pedestrian Volume crossing m	11			85			12			86		
v_co, Outbound Pedestrian Volume crossing	13			14			14			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			14			14			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			18			7			15		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	85	79	16	79	85	32	32	32	32	32	32
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	94	78	78	94	86	86	29	29
g / C, Green / Cycle	0.72	0.60	0.60	0.72	0.66	0.66	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.37	0.87	0.87	0.80	0.50	0.51	0.44	0.73
s, saturation flow rate [veh/h]	355	837	831	431	837	810	324	767
c, Capacity [veh/h]	295	502	499	160	553	536	112	190
d1, Uniform Delay [s]	15.59	25.99	25.99	47.89	14.94	15.09	54.72	50.74
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.71	211.87	213.82	539.12	9.41	10.04	176.10	894.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	1.45	1.45	2.15	0.76	0.77	1.28	2.96
d, Delay for Lane Group [s/veh]	20.30	237.86	239.81	587.01	24.35	25.13	230.82	945.65
Lane Group LOS	C	F	F	F	C	C	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	43.45	43.45	25.42	9.31	9.25	9.24	53.70
50th-Percentile Queue Length [ft/ln]	33.01	1086.26	1086.23	635.55	232.75	231.28	230.90	1342.61
95th-Percentile Queue Length [veh/ln]	2.38	68.90	68.99	45.76	14.31	14.24	15.83	87.40
95th-Percentile Queue Length [ft/ln]	59.42	1722.61	1724.75	1144.00	357.85	355.99	395.65	2185.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.30	238.82	239.81	587.01	24.71	25.13	230.82	230.82	230.82	945.65	945.65	945.65
Movement LOS	C	F	F	F	C	C	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	220.84			189.83			230.82			945.65		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	328.66											
Intersection LOS	F											
Intersection V/C	1.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.29	56.29	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	3.345	3.075	1.999	2.563
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1154	443	446
d_b, Bicycle Delay [s]	9.22	11.72	39.50	39.51
l_b,int, Bicycle LOS Score for Intersection	2.862	2.529	1.796	2.489
Bicycle LOS	C	B	A	B

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	54.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.095

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	101	1440	818	99	34	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	1440	818	99	34	79
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	372	211	26	9	20
Total Analysis Volume [veh/h]	104	1489	846	102	35	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing m	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	115	95	95	30	30
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	14	122	106	106	16	16
g / C, Green / Cycle	0.09	0.84	0.73	0.73	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.93	0.57	0.59	0.04	0.09
s, saturation flow rate [veh/h]	1265	1593	837	801	994	893
c, Capacity [veh/h]	118	1342	609	583	109	98
d1, Uniform Delay [s]	64.90	11.42	12.33	13.09	59.56	63.08
k, delay calibration	0.08	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.07	60.49	9.45	11.76	0.63	7.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	1.11	0.78	0.81	0.32	0.84
d, Delay for Lane Group [s/veh]	78.97	71.91	21.77	24.85	60.18	70.11
Lane Group LOS	E	F	C	C	E	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.22	24.11	9.92	10.74	1.21	3.16
50th-Percentile Queue Length [ft/ln]	105.47	602.66	247.99	268.58	30.37	78.96
95th-Percentile Queue Length [veh/ln]	7.59	35.19	15.08	16.12	2.19	5.69
95th-Percentile Queue Length [ft/ln]	189.68	879.82	377.12	402.96	54.67	142.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.97	71.91	23.13	24.85	60.18	70.11
Movement LOS	E	F	C	C	E	E
d_A, Approach Delay [s/veh]	72.37		23.31		67.14	
Approach LOS	E		C		E	
d_I, Intersection Delay [s/veh]	54.64					
Intersection LOS	D					
Intersection V/C	1.095					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.75	63.75	61.89
l_p,int, Pedestrian LOS Score for Intersectio	2.979	2.958	2.068
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1532	1256	373
d_b, Bicycle Delay [s]	3.97	10.06	48.03
l_b,int, Bicycle LOS Score for Intersection	2.874	2.342	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	257.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.650

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1466	360	28	890	444	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1466	360	28	890	444	17
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	372	91	7	226	113	4
Total Analysis Volume [veh/h]	1487	365	28	903	450	17
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	110	110	21	124	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	108	108	16	124	21	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	112	112	5	120	18	18
g / C, Green / Cycle	0.77	0.77	0.03	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.14	0.65	0.04	0.70	0.36	0.36
s, saturation flow rate [veh/h]	1302	561	647	1293	647	641
c, Capacity [veh/h]	1008	434	21	1070	79	79
d1, Uniform Delay [s]	16.38	10.06	70.13	7.15	63.60	63.60
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	219.13	17.51	168.24	8.15	912.25	912.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.47	0.84	1.32	0.84	2.95	2.95
d, Delay for Lane Group [s/veh]	235.50	27.58	238.36	15.29	975.85	976.15
Lane Group LOS	F	C	F	B	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	43.48	7.81	1.77	6.61	23.06	22.86
50th-Percentile Queue Length [ft/ln]	1087.03	195.16	44.31	165.25	576.40	571.53
95th-Percentile Queue Length [veh/ln]	70.85	12.39	3.19	10.83	38.57	38.28
95th-Percentile Queue Length [ft/ln]	1771.37	309.72	79.75	270.66	964.27	956.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	235.50	27.58	238.36	15.29	975.99	976.15
Movement LOS	F	C	F	B	F	F
d_A, Approach Delay [s/veh]	194.52		22.00		976.00	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	257.39					
Intersection LOS	F					
Intersection V/C	1.650					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	61.92
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.242
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1434	1655	246
d_b, Bicycle Delay [s]	5.81	2.16	55.85
l_b,int, Bicycle LOS Score for Intersection	3.088	2.328	2.330
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	218.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.162

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	332	1526	463	93	1138	17	44	178	308	291	159	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	332	1526	463	93	1138	17	44	178	308	291	159	68
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	406	123	25	303	5	12	47	82	77	42	18
Total Analysis Volume [veh/h]	353	1623	493	99	1211	18	47	189	328	310	169	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11			20			10			19		
v_di, Inbound Pedestrian Volume crossing m	10			19			11			20		
v_co, Outbound Pedestrian Volume crossing	3			7			7			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			7			7			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	140.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	4
Maximum Green [s]	21	40	40	21	40	40	5	25	25	5	21	5
Amber [s]	3.0	4.4	4.4	3.0	4.0	4.0	3.0	3.6	3.6	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0
Split [s]	31	51	51	14	34	34	14	34	34	51	31	51
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.4	3.4	1.0	3.0	3.0	2.0	2.6	2.6	2.0	1.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.40	5.40	3.00	5.00	5.00	4.00	4.60	4.60	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.40	3.40	1.00	3.00	3.00	2.00	2.60	2.60	2.00	1.00	1.00
g_i, Effective Green Time [s]	28	52	52	11	35	35	8	28	28	43	23	23
g / C, Green / Cycle	0.22	0.40	0.40	0.08	0.27	0.27	0.06	0.22	0.22	0.33	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.28	0.56	0.59	0.11	0.43	0.43	0.04	0.19	0.22	0.09	0.13	0.05
s, saturation flow rate [veh/h]	1265	2530	1178	937	1874	974	1139	984	1519	3357	1329	1456
c, Capacity [veh/h]	272	1007	469	79	507	264	55	214	331	1101	234	257
d1, Uniform Delay [s]	51.00	39.12	39.12	59.48	47.40	47.40	64.99	49.23	50.11	32.33	50.52	46.19
k, delay calibration	0.50	0.50	0.50	0.15	0.50	0.50	0.11	0.20	0.28	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	157.70	189.14	231.91	138.84	275.74	285.69	27.91	18.58	34.83	0.14	4.06	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.30	1.41	1.49	1.25	1.59	1.60	0.85	0.88	0.99	0.28	0.72	0.28
d, Delay for Lane Group [s/veh]	208.71	228.25	271.03	198.32	323.14	333.09	92.90	67.80	84.95	32.47	54.58	46.41
Lane Group LOS	F	F	F	F	F	F	F	E	F	C	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.61	41.87	44.55	5.70	27.68	29.50	2.02	7.03	13.67	3.67	5.46	2.04
50th-Percentile Queue Length [ft/ln]	515.14	1046.64	1113.71	142.58	691.88	737.58	50.47	175.84	341.84	91.78	136.61	51.03
95th-Percentile Queue Length [veh/ln]	31.80	64.10	69.37	10.27	44.73	47.43	3.63	11.38	19.74	6.61	9.30	3.67
95th-Percentile Queue Length [ft/ln]	794.97	1602.40	1734.35	256.65	1118.20	1185.71	90.85	284.58	493.45	165.21	232.45	91.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	208.71	233.68	271.03	198.32	326.45	333.09	92.90	67.80	84.95	32.47	54.58	46.41
Movement LOS	F	F	F	F	F	F	F	E	F	C	D	D
d_A, Approach Delay [s/veh]	237.57			316.99			79.86			41.07		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	218.89											
Intersection LOS	F											
Intersection V/C	1.162											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.415	3.036	2.418	2.688
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	702	446	452	431
d_b, Bicycle Delay [s]	27.39	39.33	39.00	40.13
l_b,int, Bicycle LOS Score for Intersection	2.918	2.290	2.490	2.469
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	58	1562	1041	270	398	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	1562	1041	270	398	54
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	419	279	72	107	14
Total Analysis Volume [veh/h]	62	1676	1117	290	427	58
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	13	100	87	87	40	40
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	31	31	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	3	35	29	29	17	17
g / C, Green / Cycle	0.04	0.57	0.47	0.47	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.03	0.47	0.31	0.19	0.24	0.04
s, saturation flow rate [veh/h]	1781	3560	3560	1550	1781	1567
c, Capacity [veh/h]	80	2026	1663	724	485	427
d1, Uniform Delay [s]	28.92	10.73	12.66	10.63	21.30	16.81
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.98	1.29	0.68	0.51	2.11	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.83	0.67	0.40	0.88	0.14
d, Delay for Lane Group [s/veh]	34.90	12.02	13.34	11.14	23.41	16.86
Lane Group LOS	C	B	B	B	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	7.36	4.98	2.20	5.60	0.58
50th-Percentile Queue Length [ft/ln]	24.71	184.08	124.40	55.08	140.05	14.41
95th-Percentile Queue Length [veh/ln]	1.78	11.81	8.63	3.97	9.48	1.04
95th-Percentile Queue Length [ft/ln]	44.48	295.33	215.86	99.15	237.09	25.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.90	12.02	13.34	11.14	23.41	16.86
Movement LOS	C	B	B	B	C	B
d_A, Approach Delay [s/veh]	12.84		12.88		22.63	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	14.16					
Intersection LOS	B					
Intersection V/C	0.867					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	20.53
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.191
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3095	2669	1172
d_b, Bicycle Delay [s]	9.19	3.43	5.24
l_b,int, Bicycle LOS Score for Intersection	2.993	2.720	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.590

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	1273	9	46	829	14	37	2	7	31	1	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1273	9	46	829	14	37	2	7	31	1	44
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	339	2	12	221	4	10	1	2	8	0	12
Total Analysis Volume [veh/h]	4	1357	10	49	884	15	39	2	7	33	1	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	0	38	38	2	40	4	4	4	5	5
g / C, Green / Cycle	0.00	0.56	0.56	0.04	0.59	0.06	0.06	0.06	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.00	0.37	0.37	0.03	0.48	0.01	0.01	0.00	0.02	0.03
s, saturation flow rate [veh/h]	1781	1870	1864	1781	1863	1781	1789	1431	1781	1510
c, Capacity [veh/h]	8	1050	1046	64	1105	106	107	85	134	114
d1, Uniform Delay [s]	33.37	10.20	10.20	32.10	10.76	30.05	30.04	29.83	29.27	29.67
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.98	1.47	1.48	17.09	3.17	0.87	0.86	0.41	0.95	2.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.65	0.65	0.77	0.81	0.19	0.19	0.08	0.25	0.42
d, Delay for Lane Group [s/veh]	78.35	11.67	11.68	49.19	13.93	30.92	30.91	30.24	30.21	32.15
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	6.38	6.37	1.07	9.54	0.35	0.35	0.12	0.53	0.80
50th-Percentile Queue Length [ft/ln]	4.00	159.55	159.36	26.87	238.38	8.69	8.70	2.97	13.13	20.01
95th-Percentile Queue Length [veh/ln]	0.29	10.53	10.52	1.93	14.60	0.63	0.63	0.21	0.95	1.44
95th-Percentile Queue Length [ft/ln]	7.20	263.13	262.88	48.36	364.98	15.65	15.65	5.35	23.63	36.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.35	11.68	11.68	49.19	13.93	13.93	30.91	30.91	30.24	30.21	32.15	32.15
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.87			15.75			30.81			31.36		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.39											
Intersection LOS	B											
Intersection V/C	0.590											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	23.43	23.43	23.43	23.43
l_p,int, Pedestrian LOS Score for Intersectio	2.581	2.760	2.120	1.962
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	597	597	895	895
d_b, Bicycle Delay [s]	16.53	16.58	10.24	10.24
l_b,int, Bicycle LOS Score for Intersection	2.691	3.124	1.639	1.693
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	18	1230	5	9	747	103	149	7	32	9	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	1230	5	9	747	103	149	7	32	9	8	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	324	1	2	197	27	39	2	8	2	2	2
Total Analysis Volume [veh/h]	19	1295	5	9	786	108	157	7	34	9	8	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing m	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	90	90	90	90	90	90	30	30	30	0	30	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	92	92	92	92	20	20
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.70	0.02	0.49	0.14	0.01
s, saturation flow rate [veh/h]	622	1868	424	1823	1376	1652
c, Capacity [veh/h]	381	1427	146	1392	285	318
d1, Uniform Delay [s]	14.54	10.99	39.00	6.56	48.03	42.07
k, delay calibration	0.50	0.50	0.50	0.50	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	10.27	0.81	2.29	5.52	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.91	0.06	0.64	0.70	0.08
d, Delay for Lane Group [s/veh]	14.78	21.26	39.81	8.85	53.55	42.17
Lane Group LOS	B	C	D	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.29	26.32	0.25	9.62	6.16	0.62
50th-Percentile Queue Length [ft/ln]	7.26	658.03	6.27	240.61	154.10	15.47
95th-Percentile Queue Length [veh/ln]	0.52	34.74	0.45	14.71	10.24	1.11
95th-Percentile Queue Length [ft/ln]	13.08	868.38	11.28	367.81	255.89	27.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.78	21.26	21.26	39.81	8.85	8.85	53.55	53.55	53.55	42.17	42.17	42.17
Movement LOS	B	C	C	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	21.17			9.16			53.55			42.17		
Approach LOS	C			A			D			D		
d_I, Intersection Delay [s/veh]	19.56											
Intersection LOS	B											
Intersection V/C	0.892											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.45	49.45	49.45	49.45
l_p,int, Pedestrian LOS Score for Intersectio	2.548	2.945	1.918	1.760
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1433	432	432
d_b, Bicycle Delay [s]	4.84	4.83	36.92	36.92
l_b,int, Bicycle LOS Score for Intersection	3.736	3.050	1.886	1.599
Bicycle LOS	D	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	1111	71	33	745	7	27	50	3	87	42	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	1111	71	33	745	7	27	50	3	87	42	116
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	294	19	9	197	2	7	13	1	23	11	31
Total Analysis Volume [veh/h]	3	1176	75	35	788	7	29	53	3	92	44	123
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing m	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	69
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	23	23	23	23	23	47	47	47	0	47	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	47	47	47	47	14	14	14	14
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.68	0.08	0.43	0.02	0.03	0.07	0.10
s, saturation flow rate [veh/h]	683	1846	444	1867	1214	1848	1342	1622
c, Capacity [veh/h]	399	1260	113	1274	191	367	291	322
d1, Uniform Delay [s]	11.18	10.78	34.37	6.05	30.50	22.88	27.46	24.73
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	23.62	7.04	2.31	0.36	0.19	0.62	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.99	0.31	0.62	0.15	0.15	0.32	0.52
d, Delay for Lane Group [s/veh]	11.21	34.39	41.40	8.36	30.87	23.07	28.07	26.02
Lane Group LOS	B	C	D	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	21.60	0.80	5.57	0.47	0.75	1.42	2.48
50th-Percentile Queue Length [ft/ln]	0.72	540.05	19.96	139.37	11.73	18.82	35.40	62.00
95th-Percentile Queue Length [veh/ln]	0.05	29.22	1.44	9.45	0.84	1.36	2.55	4.46
95th-Percentile Queue Length [ft/ln]	1.29	730.61	35.92	236.18	21.11	33.88	63.73	111.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.21	34.39	34.39	41.40	8.36	8.36	30.87	23.07	23.07	28.07	26.02	26.02
Movement LOS	B	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	34.34			9.75			25.73			26.75		
Approach LOS	C			A			C			C		
d_I, Intersection Delay [s/veh]	24.82											
Intersection LOS	C											
Intersection V/C	0.869											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.39	24.39	24.39	24.39
l_p,int, Pedestrian LOS Score for Intersectio	2.635	2.596	1.968	2.090
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	548	548	1243	1243
d_b, Bicycle Delay [s]	18.34	18.31	4.96	4.96
l_b,int, Bicycle LOS Score for Intersection	3.629	2.929	1.700	1.987
Bicycle LOS	D	C	A	A

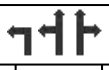
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	61.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.794

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	15	294	155	339	135	379	81	338	303	601	408	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	15	294	155	339	135	379	81	338	303	601	408	8
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	77	40	88	35	99	21	88	79	157	106	2
Total Analysis Volume [veh/h]	16	307	162	354	141	396	85	353	316	627	426	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			6			12			6		
v_di, Inbound Pedestrian Volume crossing m	12			6			12			6		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	50			19			4			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	40	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	40	0	34	34	34	0	38	0	29	29	29
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	43	43	43	22	22	22	22	30	30	30
g / C, Green / Cycle	0.19	0.19	0.19	0.30	0.30	0.30	0.16	0.16	0.16	0.16	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.11	0.14	0.14	0.26	0.05	0.13	0.13	0.13	0.19	0.19	0.20
s, saturation flow rate [veh/h]	1781	1870	1423	1781	1830	1548	1781	1870	1693	1543	1781	1798	1859
c, Capacity [veh/h]	336	353	269	542	557	471	283	297	269	245	386	389	403
d1, Uniform Delay [s]	46.53	55.17	51.35	39.36	39.24	45.17	52.04	56.88	57.05	56.94	53.43	53.43	53.45
k, delay calibration	0.11	0.14	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.31	0.31	0.31
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	8.46	2.17	2.74	2.58	16.38	0.59	5.22	6.33	7.53	18.47	18.32	18.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.87	0.60	0.45	0.45	0.84	0.30	0.81	0.83	0.84	0.90	0.90	0.90
d, Delay for Lane Group [s/veh]	46.59	63.63	53.51	42.10	41.82	61.55	52.63	62.10	63.37	64.47	71.90	71.75	71.51
Lane Group LOS	D	E	D	D	D	E	D	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.47	11.37	5.34	7.39	7.42	15.01	2.71	8.68	8.11	7.58	13.88	14.00	14.47
50th-Percentile Queue Length [ft/ln]	11.71	284.20	133.43	184.77	185.43	375.32	67.77	216.9	202.7	189.5	347.02	349.96	361.70
95th-Percentile Queue Length [veh/ln]	0.84	16.90	9.13	11.85	11.88	21.37	4.88	13.51	12.78	12.10	19.99	20.13	20.71
95th-Percentile Queue Length [ft/ln]	21.09	422.43	228.15	296.24	297.09	534.18	121.9	337.6	319.4	302.4	499.77	503.36	517.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.59	63.63	53.51	42.02	41.82	61.55	52.63	62.50	64.13	71.84	71.55	71.51
Movement LOS	D	E	D	D	D	E	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	59.69			50.67			62.05			71.72		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	61.73											
Intersection LOS	E											
Intersection V/C	0.794											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.55	58.55	58.55	58.55
l_p,int, Pedestrian LOS Score for Intersectio	2.327	2.831	4.334	2.676
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	510	418	475	347
d_b, Bicycle Delay [s]	39.88	44.22	40.78	48.18
l_b,int, Bicycle LOS Score for Intersection	2.360	3.030	3.007	2.435
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	75.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	89	611	68	24	624	58	203	126	39	69	120	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	611	68	24	624	58	203	126	39	69	120	25
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	168	19	7	171	16	56	35	11	19	33	7
Total Analysis Volume [veh/h]	98	671	75	26	686	64	223	138	43	76	132	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			20			20			17		
v_di, Inbound Pedestrian Volume crossing m	17			20			20			18		
v_co, Outbound Pedestrian Volume crossing	33			29			34			29		
v_ci, Inbound Pedestrian Volume crossing mi	34			29			33			29		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			5			20			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	30	60	60	30	30	30	35	35	35	35	35	35
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	84	84	10	81	81	40	46	40	46	40	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	4.10	4.10	4.00	4.00	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.10	0.00	2.00	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	84	77	84	72	47	47	36	36
g / C, Green / Cycle	0.47	0.43	0.47	0.40	0.26	0.26	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.12	0.41	0.03	0.41	0.13	0.10	0.04	0.09
s, saturation flow rate [veh/h]	846	1815	786	1823	1781	1731	1781	1770
c, Capacity [veh/h]	174	773	140	728	470	457	355	353
d1, Uniform Delay [s]	42.24	50.32	41.33	54.05	55.78	54.49	60.25	63.37
k, delay calibration	0.11	0.41	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.85	21.87	0.63	41.20	3.42	2.57	1.37	4.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.96	0.19	1.03	0.47	0.40	0.21	0.45
d, Delay for Lane Group [s/veh]	45.09	72.19	41.97	95.25	59.20	57.06	61.63	67.49
Lane Group LOS	D	E	D	F	E	E	E	E
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.61	37.39	0.65	41.24	9.10	7.18	3.10	6.93
50th-Percentile Queue Length [ft/ln]	65.29	934.65	16.35	1031.02	227.40	179.61	77.56	173.29
95th-Percentile Queue Length [veh/ln]	4.70	47.41	1.18	52.96	14.04	11.58	5.58	11.25
95th-Percentile Queue Length [ft/ln]	117.51	1185.34	29.43	1324.09	351.05	289.50	139.60	281.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.09	72.19	72.19	41.97	95.25	95.25	59.20	57.06	57.06	61.63	67.49	67.49
Movement LOS	D	E	E	D	F	F	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	69.04			93.47			58.24			65.59		
Approach LOS	E			F			E			E		
d_I, Intersection Delay [s/veh]	75.14											
Intersection LOS	E											
Intersection V/C	0.674											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	79.34	79.34	79.34	79.34
l_p,int, Pedestrian LOS Score for Intersectio	2.551	2.482	2.196	2.175
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	881	848	460	393
d_b, Bicycle Delay [s]	28.18	29.95	53.90	58.28
l_b,int, Bicycle LOS Score for Intersection	2.952	2.840	2.226	1.947
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	337	90	25	247	33	93	182	16	20	147	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	337	90	25	247	33	93	182	16	20	147	26
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	94	25	7	69	9	26	51	4	6	41	7
Total Analysis Volume [veh/h]	23	376	100	28	276	37	104	203	18	22	164	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			2			9			3		
v_di, Inbound Pedestrian Volume crossing m	9			3			9			2		
v_co, Outbound Pedestrian Volume crossing	7			1			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			12			20			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	50	50	50	50
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	18	18	11	9
g / C, Green / Cycle	0.35	0.35	0.23	0.17
(v / s)_i Volume / Saturation Flow Rate	0.28	0.19	0.18	0.12
s, saturation flow rate [veh/h]	1753	1788	1823	1817
c, Capacity [veh/h]	692	707	414	315
d1, Uniform Delay [s]	14.62	12.93	18.21	19.41
k, delay calibration	0.11	0.11	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.43	0.51	3.33	1.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.48	0.79	0.68
d, Delay for Lane Group [s/veh]	16.05	13.44	21.54	21.35
Lane Group LOS	B	B	C	C
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	4.66	2.75	3.57	2.26
50th-Percentile Queue Length [ft/ln]	116.53	68.81	89.25	56.52
95th-Percentile Queue Length [veh/ln]	8.20	4.95	6.43	4.07
95th-Percentile Queue Length [ft/ln]	205.05	123.86	160.65	101.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.05	16.05	16.05	13.44	13.44	13.44	21.54	21.54	21.54	21.35	21.35	21.35
Movement LOS	B	B	B	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.05			13.44			21.54			21.35		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.53											
Intersection LOS	B											
Intersection V/C	0.632											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	15.16	16.75	15.16	15.16
l_p,int, Pedestrian LOS Score for Intersectio	2.050	1.993	1.972	1.947
Crosswalk LOS	B	A	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1203	1203	1203	1203
d_b, Bicycle Delay [s]	4.00	3.99	4.00	3.97
l_b,int, Bicycle LOS Score for Intersection	2.383	2.122	2.096	1.914
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.802

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	16	13	33	115	3	302	29	1535	112	155	1123	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.40	0.00	1.50	1.20	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	13	33	115	3	302	29	1535	112	155	1123	12
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	9	30	1	79	8	402	29	41	294	3
Total Analysis Volume [veh/h]	17	14	35	121	3	317	30	1609	117	162	1177	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			14			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	30	0	0	30	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	27	0	0	27	0	15	58	0	25	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	21	6	61	61	12	67	67
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.05	0.56	0.56	0.11	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.20	0.02	6.01	0.20	0.02	0.45	0.07	0.09	0.22	0.22
s, saturation flow rate [veh/h]	156	1590	21	1574	1810	3578	1568	1788	3583	1870
c, Capacity [veh/h]	80	304	69	301	99	1987	871	193	2181	1138
d1, Uniform Delay [s]	38.27	36.77	54.72	44.31	49.00	10.50	6.64	46.16	4.66	4.66
k, delay calibration	0.22	0.11	0.50	0.23	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.08	0.17	414.68	49.80	1.70	3.70	0.32	9.36	0.46	0.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.12	1.81	1.05	0.30	0.81	0.13	0.84	0.36	0.36
d, Delay for Lane Group [s/veh]	44.35	36.93	469.40	94.11	50.70	14.20	6.96	55.52	5.12	5.54
Lane Group LOS	D	D	F	F	D	B	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.85	0.82	9.80	12.26	0.82	9.20	0.84	4.65	2.04	2.27
50th-Percentile Queue Length [ft/ln]	21.13	20.48	245.06	306.45	20.61	230.08	20.98	116.31	51.12	56.73
95th-Percentile Queue Length [veh/ln]	1.52	1.47	17.64	18.48	1.48	14.18	1.51	8.19	3.68	4.08
95th-Percentile Queue Length [ft/ln]	38.03	36.87	441.10	462.11	37.10	354.46	37.77	204.74	92.01	102.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.35	44.35	36.93	469.40	469.40	94.11	50.70	14.20	6.96	55.52	5.26	5.54
Movement LOS	D	D	D	F	F	F	D	B	A	E	A	A
d_A, Approach Delay [s/veh]	40.41			199.63			14.34			11.29		
Approach LOS	D			F			B			B		
d_I, Intersection Delay [s/veh]	36.28											
Intersection LOS	D											
Intersection V/C	6.802											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.968	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	382	382	927	1109
d_b, Bicycle Delay [s]	36.05	36.05	15.93	10.93
l_b,int, Bicycle LOS Score for Intersection	1.669	2.287	3.008	2.303
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	294	153	103	51	233	50	122	1399	53	60	919	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	294	153	103	51	233	50	122	1399	53	60	919	153
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	40	27	13	61	13	32	369	14	16	242	40
Total Analysis Volume [veh/h]	310	161	109	54	246	53	129	1474	56	63	968	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			1			9			2		
v_di, Inbound Pedestrian Volume crossing m	9			2			8			1		
v_co, Outbound Pedestrian Volume crossing	1			5			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			5			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			5			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	35	0	0	35	0	20	70	0	20	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	29	29	29	26	26	26	14	82	82	8	76	76
g / C, Green / Cycle	0.18	0.18	0.18	0.16	0.16	0.16	0.08	0.51	0.51	0.05	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.07	0.03	0.13	0.03	0.07	0.41	0.04	0.04	0.27	0.10
s, saturation flow rate [veh/h]	1781	1840	1515	1781	1870	1551	1781	3560	1539	1781	3560	1543
c, Capacity [veh/h]	319	330	272	294	308	256	151	1826	790	85	1697	736
d1, Uniform Delay [s]	62.04	62.03	57.94	57.63	64.35	57.81	70.06	19.73	12.63	74.00	19.83	16.53
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.14	3.03	0.96	0.30	4.74	0.40	12.48	3.94	0.17	11.60	1.40	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.72	0.40	0.18	0.80	0.21	0.85	0.81	0.07	0.74	0.57	0.22
d, Delay for Lane Group [s/veh]	65.18	65.06	58.89	57.93	69.09	58.21	82.54	23.67	12.80	85.60	21.23	17.22
Lane Group LOS	E	E	E	E	E	E	F	C	B	F	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.24	9.52	4.01	1.95	10.18	1.92	5.58	17.21	0.73	2.81	9.68	2.59
50th-Percentile Queue Length [ft/ln]	230.95	238.04	100.16	48.65	254.53	48.01	139.54	430.28	18.13	70.24	242.01	64.79
95th-Percentile Queue Length [veh/ln]	14.22	14.58	7.21	3.50	15.41	3.46	9.46	24.01	1.31	5.06	14.78	4.67
95th-Percentile Queue Length [ft/ln]	355.57	364.55	180.29	87.58	385.35	86.41	236.41	600.37	32.63	126.44	369.58	116.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.15	65.06	58.89	57.93	69.09	58.21	82.54	23.67	12.80	85.60	21.23	17.22
Movement LOS	E	E	E	E	E	E	F	C	B	F	C	B
d_A, Approach Delay [s/veh]	63.95			65.75			27.88			24.09		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	35.75											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	72.26	72.26	72.26
l_p,int, Pedestrian LOS Score for Intersectio	2.432	2.289	3.011	2.974
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	356	784	779
d_b, Bicycle Delay [s]	54.26	54.23	29.64	29.96
l_b,int, Bicycle LOS Score for Intersection	2.517	2.142	2.928	2.543
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	121	257	107	127	203	82	74	1333	99	89	961	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	257	107	127	203	82	74	1333	99	89	961	50
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	66	28	33	52	21	19	343	25	23	247	13
Total Analysis Volume [veh/h]	124	264	110	131	209	84	76	1371	102	92	989	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	6			0			0			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			0			0			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	10			10			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	20	40	0	20	40	0	21	83	0	18	79	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	28	28	14	26	26	9	91	91	10	93	93
g / C, Green / Cycle	0.10	0.17	0.17	0.09	0.16	0.16	0.05	0.57	0.57	0.06	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.07	0.14	0.07	0.07	0.11	0.05	0.04	0.39	0.07	0.05	0.28	0.03
s, saturation flow rate [veh/h]	1781	1870	1550	1781	1870	1548	1781	3560	1554	1781	3560	1537
c, Capacity [veh/h]	178	325	270	152	298	247	95	2029	885	112	2064	891
d1, Uniform Delay [s]	69.71	63.61	58.69	72.26	63.66	59.70	72.09	1.94	1.74	72.43	9.47	7.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	4.87	0.99	12.94	2.98	0.81	14.06	1.82	0.26	13.44	0.80	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.81	0.41	0.86	0.70	0.34	0.80	0.68	0.12	0.82	0.48	0.06
d, Delay for Lane Group [s/veh]	74.56	68.48	59.68	85.20	66.63	60.51	86.16	3.77	2.00	85.87	10.27	7.91
Lane Group LOS	E	E	E	F	E	E	F	A	A	F	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	10.92	4.10	5.92	8.41	3.13	3.36	1.85	0.26	4.09	5.19	0.47
50th-Percentile Queue Length [ft/ln]	130.50	272.90	102.54	148.01	210.34	78.34	84.08	46.31	6.42	102.33	129.65	11.81
95th-Percentile Queue Length [veh/ln]	8.97	16.33	7.38	9.91	13.17	5.64	6.05	3.33	0.46	7.37	8.92	0.85
95th-Percentile Queue Length [ft/ln]	224.17	408.36	184.57	247.78	329.27	141.01	151.34	83.36	11.55	184.20	223.01	21.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.56	68.48	59.68	85.20	66.63	60.51	86.16	3.77	2.00	85.87	10.27	7.91
Movement LOS	E	E	E	F	E	E	F	A	A	F	B	A
d_A, Approach Delay [s/veh]	68.05			71.16			7.69			16.31		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	26.21											
Intersection LOS	C											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.23	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.329	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	942	892
d_b, Bicycle Delay [s]	51.17	51.17	22.44	24.63
l_b,int, Bicycle LOS Score for Intersection	2.381	2.259	2.838	2.494
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	7.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	56	21	77	47	30	50	0	1463	42	0	1069	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	21	77	47	30	50	0	1463	42	0	1069	83
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9500	0.9560	0.9560	0.9500	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	5	20	12	8	13	0	383	11	0	280	22
Total Analysis Volume [veh/h]	59	22	81	49	31	52	0	1530	44	0	1118	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			14			13			0		
v_di, Inbound Pedestrian Volume crossing m	0			13			14			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			12			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	35	0	0	30	0	0	95	0	0	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	13	13	13	13	13	120	120	120	120
g / C, Green / Cycle	0.08	0.08	0.08	0.08	0.08	0.75	0.75	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.05	0.03	0.05	0.43	0.03	0.31	0.05
s, saturation flow rate [veh/h]	1781	1870	1511	1781	1634	3560	1527	3560	1589
c, Capacity [veh/h]	148	156	126	148	136	2674	1147	2674	1194
d1, Uniform Delay [s]	69.55	68.05	70.86	69.18	70.88	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.72	0.41	5.39	1.29	4.39	0.90	0.06	0.48	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.14	0.64	0.33	0.61	0.57	0.04	0.42	0.07
d, Delay for Lane Group [s/veh]	71.27	68.46	76.25	70.47	75.27	0.90	0.06	0.48	0.12
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.38	0.86	3.42	1.97	3.50	0.33	0.02	0.18	0.04
50th-Percentile Queue Length [ft/ln]	59.56	21.53	85.54	49.34	87.45	8.32	0.50	4.48	0.98
95th-Percentile Queue Length [veh/ln]	4.29	1.55	6.16	3.55	6.30	0.60	0.04	0.32	0.07
95th-Percentile Queue Length [ft/ln]	107.21	38.75	153.98	88.81	157.42	14.97	0.90	8.07	1.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.27	68.46	76.25	70.47	75.27	75.27	0.00	0.90	0.06	0.00	0.48	0.12
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	73.38			73.49			0.87			0.46		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.65											
Intersection LOS	A											
Intersection V/C	0.548											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.21	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.023	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	280	1092	1092
d_b, Bicycle Delay [s]	54.85	59.54	16.51	16.48
l_b,int, Bicycle LOS Score for Intersection	1.827	1.777	2.858	2.554
Bicycle LOS	A	A	C	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	48	298	118	489	258	88	176	1349	586	167	1001	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	298	118	489	258	88	176	1349	586	167	1001	45
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	78	31	129	68	23	46	355	154	44	263	12
Total Analysis Volume [veh/h]	50	313	124	514	271	93	185	1419	616	176	1053	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			18			0			19		
v_di, Inbound Pedestrian Volume crossing m	0			19			0			18		
v_co, Outbound Pedestrian Volume crossing	16			6			6			15		
v_ci, Inbound Pedestrian Volume crossing mi	15			6			6			16		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	13			14			5			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.2	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.20	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.20	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	66	66	18	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.44	0.44	0.12	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.15	0.14	0.06	0.10	0.40	0.40	0.10	0.30	0.03
s, saturation flow rate [veh/h]	1852	1682	3459	1870	1458	1781	3560	1554	1781	3560	1535
c, Capacity [veh/h]	290	264	669	362	282	200	1566	684	218	1598	689
d1, Uniform Delay [s]	61.73	62.09	57.36	57.11	51.87	63.20	28.29	27.67	58.05	13.21	10.58
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.00	4.30	0.71	1.18	0.25	7.29	9.11	17.29	2.68	2.15	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.90	0.77	0.75	0.33	0.92	0.91	0.90	0.81	0.66	0.07
d, Delay for Lane Group [s/veh]	64.73	66.40	58.07	58.29	52.12	70.49	37.40	44.96	60.73	15.36	10.77
Lane Group LOS	E	E	E	E	D	E	D	D	E	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.59	9.18	9.35	9.86	3.06	7.13	21.83	19.99	6.06	6.04	0.47
50th-Percentile Queue Length [ft/ln]	239.82	229.38	233.63	246.53	76.41	178.18	545.69	499.79	151.59	150.89	11.77
95th-Percentile Queue Length [veh/ln]	14.67	14.14	14.36	15.01	5.50	11.51	29.49	27.32	10.10	10.06	0.85
95th-Percentile Queue Length [ft/ln]	366.81	353.58	358.97	375.28	137.53	287.64	737.24	683.11	252.55	251.61	21.19

Movement, Approach, & Intersection Results

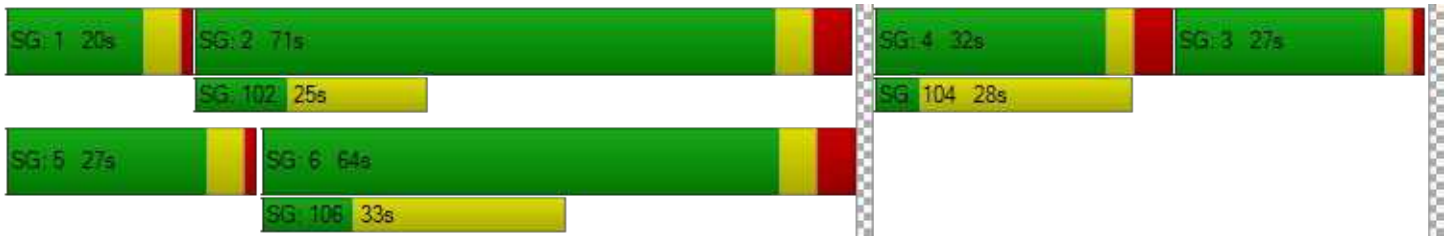
d_M, Delay for Movement [s/veh]	64.73	65.33	66.40	58.07	58.29	52.12	70.49	37.40	44.96	60.73	15.36	10.77
Movement LOS	E	E	E	E	E	D	E	D	D	E	B	B
d_A, Approach Delay [s/veh]	65.54			57.51			42.26			21.45		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	41.88											
Intersection LOS	D											
Intersection V/C	0.808											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.69	61.69	0.00	66.31
l_p,int, Pedestrian LOS Score for Intersectio	2.285	2.798	0.000	3.016
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	838
d_b, Bicycle Delay [s]	54.15	52.49	29.62	25.32
l_b,int, Bicycle LOS Score for Intersection	1.961	3.008	3.391	2.612
Bicycle LOS	A	C	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	9.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	57	10	36	40	15	94	51	1786	10	103	1463	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	10	36	40	15	94	51	1786	10	103	1463	38
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	3	9	10	4	25	13	469	3	27	384	10
Total Analysis Volume [veh/h]	60	10	38	42	16	99	54	1874	10	108	1535	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			4			5		
v_di, Inbound Pedestrian Volume crossing m	5			4			4			6		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			16			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	36	36	36	36	36	36	29	95	95	29	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	24	9	114	114	12	117	117
g / C, Green / Cycle	0.15	0.15	0.15	0.06	0.72	0.72	0.07	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.11	0.05	0.06	0.03	0.35	0.35	0.06	0.29	0.29
s, saturation flow rate [veh/h]	1001	1247	1533	1781	3560	1864	1781	3560	1841
c, Capacity [veh/h]	184	225	229	101	2546	1333	129	2602	1346
d1, Uniform Delay [s]	68.09	60.52	61.76	71.87	1.17	1.17	71.33	0.58	0.58
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.94	0.60	1.29	4.28	0.67	1.27	13.02	0.46	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.26	0.43	0.53	0.49	0.49	0.84	0.40	0.40
d, Delay for Lane Group [s/veh]	71.03	61.12	63.06	76.15	1.83	2.44	84.35	1.03	1.47
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.49	2.20	3.84	2.24	1.25	1.53	4.73	0.61	0.79
50th-Percentile Queue Length [ft/ln]	112.20	55.04	96.06	55.92	31.16	38.24	118.19	15.19	19.76
95th-Percentile Queue Length [veh/ln]	7.96	3.96	6.92	4.03	2.24	2.75	8.29	1.09	1.42
95th-Percentile Queue Length [ft/ln]	199.06	99.07	172.92	100.65	56.09	68.84	207.34	27.34	35.57

Movement, Approach, & Intersection Results

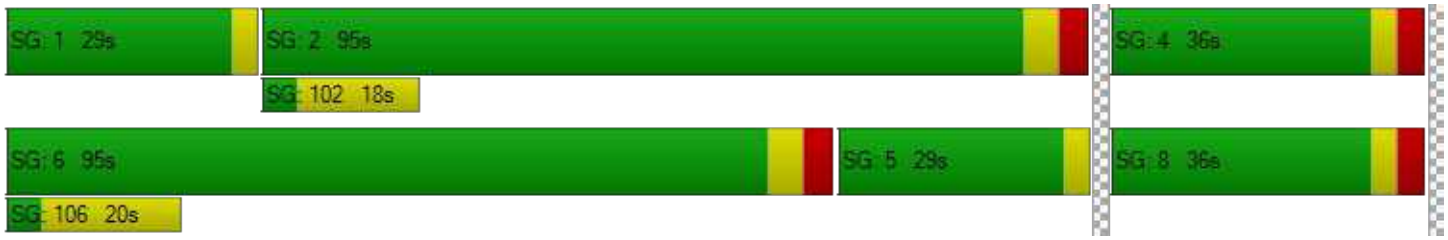
d_M, Delay for Movement [s/veh]	71.03	71.03	71.03	61.12	61.12	63.06	76.15	2.04	2.44	84.35	1.17	1.47
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	71.03			62.34			4.11			6.52		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	9.36											
Intersection LOS	A											
Intersection V/C	0.550											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.832	2.015	0.000	0.000
Crosswalk LOS	A	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	1099	1099
d_b, Bicycle Delay [s]	53.05	53.24	16.29	16.25
l_b,int, Bicycle LOS Score for Intersection	1.738	1.819	2.626	2.485
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	238	0	183	0	1	3	270	1734	1	2	1356	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	238	0	183	0	1	3	270	1734	1	2	1356	124
Peak Hour Factor	0.9520	0.9900	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	0	48	0	0	1	71	455	0	1	356	33
Total Analysis Volume [veh/h]	250	0	192	0	1	3	284	1821	1	2	1424	130
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			7			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	5	0	0	10	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	41	41	0	0	41	0	55	85	0	34	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	35	35	35	35	28	114	114	0	87	87
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.17	0.71	0.71	0.00	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.18	0.12	0.00	0.00	0.16	0.34	0.34	0.00	0.29	0.29
s, saturation flow rate [veh/h]	1412	1592	1191	1651	1781	3560	1869	1781	3560	1779
c, Capacity [veh/h]	333	350	162	363	307	2545	1336	4	1939	969
d1, Uniform Delay [s]	61.61	55.40	0.00	48.83	60.57	1.18	1.18	79.64	12.81	12.85
k, delay calibration	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	1.34	0.00	0.01	11.53	0.62	1.19	61.56	1.05	2.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.55	0.00	0.01	0.92	0.47	0.47	0.46	0.53	0.54
d, Delay for Lane Group [s/veh]	66.35	56.74	0.00	48.85	72.11	1.80	2.36	141.20	13.87	14.97
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.30	7.07	0.00	0.13	11.94	1.25	1.52	0.16	7.08	7.44
50th-Percentile Queue Length [ft/ln]	257.57	176.69	0.00	3.22	298.52	31.32	38.10	3.91	176.91	185.93
95th-Percentile Queue Length [veh/ln]	15.57	11.43	0.00	0.23	17.61	2.25	2.74	0.28	11.44	11.91
95th-Percentile Queue Length [ft/ln]	389.17	285.69	0.00	5.79	440.19	56.37	68.58	7.04	285.97	297.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.35	56.74	56.74	0.00	48.85	48.85	72.11	2.00	2.36	141.20	14.17	14.97
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	62.17			48.85			11.45			14.40		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	18.06											
Intersection LOS	B											
Intersection V/C	0.671											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.971	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	437	974	711
d_b, Bicycle Delay [s]	48.88	48.83	21.14	33.29
l_b,int, Bicycle LOS Score for Intersection	2.289	1.566	2.718	2.415
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	22	0	35	1	1	1	150	2019	2	25	1560	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	0	35	1	1	1	150	2019	2	25	1560	12
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	9	0	0	0	40	533	1	7	412	3
Total Analysis Volume [veh/h]	23	0	37	1	1	1	158	2132	2	26	1647	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			17			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	40	0	0	40	0	35	105	0	15	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	16	132	132	3	118	118
g / C, Green / Cycle	0.08	0.08	0.08	0.10	0.82	0.82	0.02	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.00	0.09	0.39	0.39	0.01	0.31	0.31
s, saturation flow rate [veh/h]	1469	1589	1635	1781	3560	1869	1781	3560	1861
c, Capacity [veh/h]	168	133	167	180	2927	1536	34	2634	1377
d1, Uniform Delay [s]	68.04	68.76	67.27	68.21	0.00	0.00	77.62	0.29	0.29
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.12	0.04	12.41	0.56	1.07	29.20	0.48	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.28	0.02	0.88	0.48	0.48	0.77	0.41	0.41
d, Delay for Lane Group [s/veh]	68.40	69.88	67.32	80.62	0.56	1.07	106.82	0.77	1.21
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.90	1.48	0.12	6.77	0.23	0.46	1.34	0.41	0.60
50th-Percentile Queue Length [ft/ln]	22.61	37.09	2.94	169.21	5.71	11.40	33.43	10.27	14.94
95th-Percentile Queue Length [veh/ln]	1.63	2.67	0.21	11.04	0.41	0.82	2.41	0.74	1.08
95th-Percentile Queue Length [ft/ln]	40.69	66.77	5.30	275.88	10.28	20.52	60.18	18.49	26.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.40	68.40	69.88	67.32	67.32	67.32	80.62	0.74	1.07	106.82	0.92	1.21
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.31			67.32			6.24			2.55		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.69											
Intersection LOS	A											
Intersection V/C	0.460											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.032	1.751	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	412	412	1225	975
d_b, Bicycle Delay [s]	50.41	50.41	12.12	21.03
l_b,int, Bicycle LOS Score for Intersection	1.659	1.565	2.820	2.487
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	11.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	301	322	107	360	364	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.90	0.50	2.30	0.00	0.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	301	322	107	360	364	90
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	92	31	103	104	26
Total Analysis Volume [veh/h]	345	369	123	413	417	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	15		0		16	
v_ci, Inbound Pedestrian Volume crossing mi	16		0		15	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		15		8	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	11	11	3	18	11	11
g / C, Green / Cycle	0.29	0.29	0.09	0.49	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.19	0.24	0.07	0.22	0.23	0.07
s, saturation flow rate [veh/h]	1861	1551	1802	1865	1810	1559
c, Capacity [veh/h]	544	453	162	918	522	450
d1, Uniform Delay [s]	11.49	12.16	16.61	6.19	12.29	10.11
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	1.37	2.71	0.13	1.08	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.81	0.76	0.45	0.80	0.23
d, Delay for Lane Group [s/veh]	11.95	13.53	19.31	6.32	13.38	10.20
Lane Group LOS	B	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.95	2.30	1.01	1.41	2.59	0.51
50th-Percentile Queue Length [ft/ln]	48.76	57.54	25.36	35.30	64.63	12.63
95th-Percentile Queue Length [veh/ln]	3.51	4.14	1.83	2.54	4.65	0.91
95th-Percentile Queue Length [ft/ln]	87.78	103.57	45.65	63.55	116.34	22.73

Movement, Approach, & Intersection Results

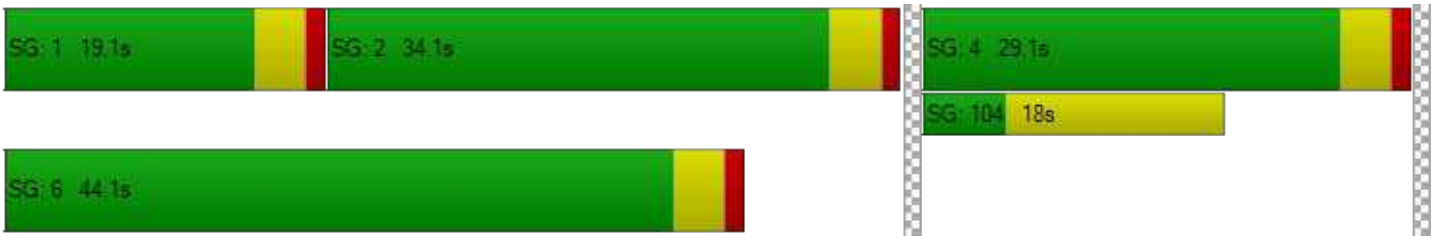
d_M, Delay for Movement [s/veh]	11.95	13.53	19.31	6.32	13.38	10.20
Movement LOS	B	B	B	A	B	B
d_A, Approach Delay [s/veh]	12.77		9.30		12.75	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.71					
Intersection LOS	B					
Intersection V/C	0.601					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	10.71	1.73
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.159	2.148
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1611	2148	1342
d_b, Bicycle Delay [s]	0.71	0.10	2.02
l_b,int, Bicycle LOS Score for Intersection	2.738	2.444	1.560
Bicycle LOS	B	B	A

Sequence

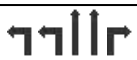
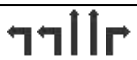
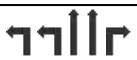
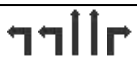
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Sand Hill Rd/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	308	521	144	348	958	158	269	755	261	118	590	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	308	521	144	348	958	158	269	755	261	118	590	172
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	137	38	91	252	42	71	198	69	31	155	45
Total Analysis Volume [veh/h]	324	548	151	366	1007	166	283	794	274	124	620	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			6			6			0		
v_di, Inbound Pedestrian Volume crossing m	0			6			6			1		
v_co, Outbound Pedestrian Volume crossing	2			1			3			2		
v_ci, Inbound Pedestrian Volume crossing mi	3			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			9			33			20		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	8	8	4	8	8	8	8	8	8	8	8
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	20	44	44	20	44	44	20	40	40	16	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.6	3.6	2.0	3.6	3.6	2.1	3.6	3.6	2.1	3.6	3.6
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.60	5.60	4.00	5.60	5.60	4.10	5.60	5.60	4.10	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.60	3.60	2.00	3.60	3.60	2.10	3.60	3.60	2.10	3.60	3.60
g_i, Effective Green Time [s]	13	48	48	15	49	49	12	30	30	8	26	26
g / C, Green / Cycle	0.11	0.40	0.40	0.12	0.41	0.41	0.10	0.25	0.25	0.07	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.15	0.10	0.11	0.28	0.11	0.08	0.22	0.18	0.04	0.17	0.12
s, saturation flow rate [veh/h]	3459	3560	1540	3459	3560	1559	3459	3560	1503	3459	3560	1536
c, Capacity [veh/h]	387	1415	612	426	1455	637	347	898	379	230	778	336
d1, Uniform Delay [s]	52.30	25.79	24.11	51.66	29.28	23.45	52.97	43.23	40.59	54.31	44.44	41.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.14	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.87	0.80	0.96	5.14	2.72	0.99	4.69	3.11	3.38	1.96	1.92	1.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.39	0.25	0.86	0.69	0.26	0.82	0.88	0.72	0.54	0.80	0.54
d, Delay for Lane Group [s/veh]	57.17	26.59	25.07	56.79	32.01	24.44	57.66	46.35	43.97	56.27	46.36	42.77
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.00	5.65	2.99	5.66	12.19	3.25	4.37	11.54	7.58	1.87	8.83	4.82
50th-Percentile Queue Length [ft/ln]	125.09	141.29	74.85	141.39	304.85	81.24	109.33	288.58	189.61	46.65	220.70	120.41
95th-Percentile Queue Length [veh/ln]	8.67	9.55	5.39	9.56	17.92	5.85	7.80	17.12	12.10	3.36	13.70	8.42
95th-Percentile Queue Length [ft/ln]	216.81	238.76	134.73	238.90	448.02	146.23	195.07	427.88	302.53	83.97	342.52	210.39

Movement, Approach, & Intersection Results

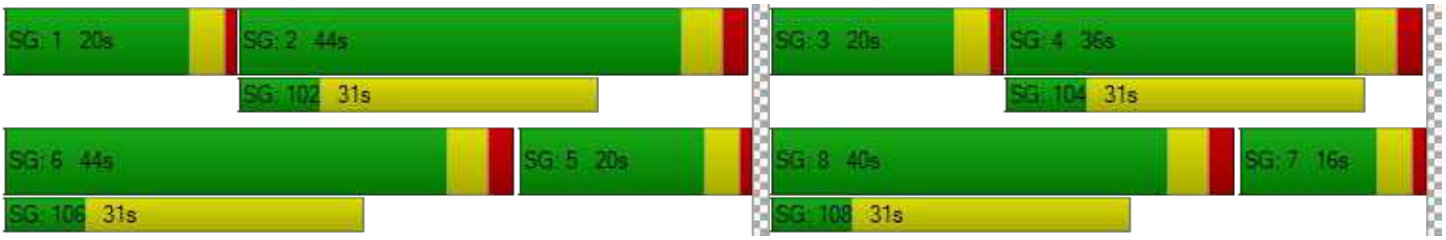
d_M, Delay for Movement [s/veh]	57.17	26.59	25.07	56.79	32.01	24.44	57.66	46.35	43.97	56.27	46.36	42.77
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	36.05			37.09			48.23			46.99		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.87											
Intersection LOS	D											
Intersection V/C	0.693											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.55	49.55	49.55	49.55
l_p,int, Pedestrian LOS Score for Intersectio	3.013	3.093	3.012	2.967
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	573	506
d_b, Bicycle Delay [s]	28.18	27.91	31.08	33.83
l_b,int, Bicycle LOS Score for Intersection	2.404	2.829	2.674	2.323
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	175	17	299	0	6	23	6	0	2	93	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	175	17	299	0	6	23	6	0	2	93	124
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	47	5	80	0	2	6	2	0	1	25	33
Total Analysis Volume [veh/h]	0	188	18	321	0	6	25	6	0	2	100	133
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	684	549	619
Degree of Utilization, x	0.77	0.07	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.32	0.22	1.77
95th-Percentile Queue Length [ft]	183.09	5.40	44.25
Approach Delay [s/veh]	23.61	10.02	12.33
Approach LOS	C	B	B
Intersection Delay [s/veh]	18.47		
Intersection LOS	C		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	150	125	8	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	125	8	0	0	0	0	0
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	34	2	0	0	0	0	0
Total Analysis Volume [veh/h]	161	134	9	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	592	538
Degree of Utilization, x	0.51	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.93	0.00
95th-Percentile Queue Length [ft]	73.21	0.00
Approach Delay [s/veh]	15.32	0.00
Approach LOS	C	A
Intersection Delay [s/veh]	18.47	
Intersection LOS	C	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	60	346	106	43	454	67	121	19	45	53	30	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	346	106	43	454	67	121	19	45	53	30	58
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	101	31	13	132	19	35	6	13	15	9	17
Total Analysis Volume [veh/h]	70	402	123	50	528	78	141	22	52	62	35	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			5			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	0			6			0			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	11			7			1			8		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	20	26	20	12	12	12
g / C, Green / Cycle	0.56	0.43	0.56	0.42	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.29	0.05	0.33	0.21	0.05	0.06
s, saturation flow rate [veh/h]	977	1781	1013	1821	1036	1326	1639
c, Capacity [veh/h]	541	770	589	769	387	156	413
d1, Uniform Delay [s]	6.91	10.86	6.12	11.89	17.95	14.26	14.16
k, delay calibration	0.23	0.23	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	2.28	0.06	3.87	1.25	1.64	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.68	0.08	0.79	0.56	0.40	0.25
d, Delay for Lane Group [s/veh]	7.14	13.14	6.19	15.76	19.20	15.91	14.46
Lane Group LOS	A	B	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.23	3.76	0.15	4.94	2.18	0.55	0.82
50th-Percentile Queue Length [ft/ln]	5.85	93.99	3.78	123.51	54.44	13.74	20.41
95th-Percentile Queue Length [veh/ln]	0.42	6.77	0.27	8.59	3.92	0.99	1.47
95th-Percentile Queue Length [ft/ln]	10.53	169.18	6.80	214.64	97.98	24.73	36.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.14	13.14	13.14	6.19	15.76	15.76	19.20	19.20	19.20	15.91	14.46	14.46
Movement LOS	A	B	B	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.43			15.03			19.20			15.01		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.63											
Intersection LOS	B											
Intersection V/C	0.613											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	-4.0	0.0	-5.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	27.91	0.00	29.01
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.464	0.000	2.069
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1263	1263	1263	1263
d_b, Bicycle Delay [s]	3.24	3.23	3.22	3.23
l_b,int, Bicycle LOS Score for Intersection	2.541	2.642	1.914	1.830
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	329	755	425	583	628	139
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	329	755	425	583	628	139
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	193	108	149	160	35
Total Analysis Volume [veh/h]	336	770	434	595	641	142
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	29		41		20	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	10	7	10	8	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	38	48	44	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	33	33	33	56	93	27	27
g / C, Green / Cycle	0.25	0.25	0.25	0.43	0.72	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.19	0.21	0.21	0.24	0.38	0.18	0.09
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1565	3560	1537
c, Capacity [veh/h]	453	475	475	769	1122	746	322
d1, Uniform Delay [s]	44.56	45.53	45.53	27.76	8.29	49.56	44.62
k, delay calibration	0.13	0.17	0.17	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.99	5.23	5.23	2.99	1.79	3.05	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.81	0.81	0.56	0.53	0.86	0.44
d, Delay for Lane Group [s/veh]	47.55	50.76	50.76	30.75	10.08	52.61	45.58
Lane Group LOS	D	D	D	C	B	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.34	12.35	12.35	10.75	7.51	10.35	4.09
50th-Percentile Queue Length [ft/ln]	258.45	308.82	308.82	268.79	187.76	258.80	102.22
95th-Percentile Queue Length [veh/ln]	15.61	18.12	18.12	16.13	12.00	15.63	7.36
95th-Percentile Queue Length [ft/ln]	390.27	452.92	452.92	403.23	300.12	390.72	183.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.55	50.76	30.75	10.08	52.61	45.58
Movement LOS	D	D	C	B	D	D
d_A, Approach Delay [s/veh]	49.78		18.80		51.34	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	39.27					
Intersection LOS	D					
Intersection V/C	0.722					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	521	601
d_b, Bicycle Delay [s]	29.28	36.27	32.11
l_b,int, Bicycle LOS Score for Intersection	2.472	1.560	2.206
Bicycle LOS	B	A	B

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road/101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	2105	0	0	984	605	325
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2105	0	0	984	605	325
Peak Hour Factor	0.9550	1.0000	1.0000	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	551	0	0	258	158	85
Total Analysis Volume [veh/h]	2204	0	0	1030	634	340
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	100	0	0	100	100	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	70	0	0	70	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	Yes	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	68	68	28	28
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.62	0.29	0.18	0.12
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2401	2401	971	790
d1, Uniform Delay [s]	13.96	7.48	31.73	29.48
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.06	0.56	3.41	1.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.43	0.65	0.43
d, Delay for Lane Group [s/veh]	21.01	8.04	35.14	31.19
Lane Group LOS	C	A	D	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.18	4.65	7.11	3.50
50th-Percentile Queue Length [ft/ln]	504.53	116.35	177.68	87.48
95th-Percentile Queue Length [veh/ln]	27.55	8.19	11.48	6.30
95th-Percentile Queue Length [ft/ln]	688.72	204.79	286.98	157.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.01	0.00	0.00	8.04	35.14	31.19
Movement LOS	C			A	D	C
d_A, Approach Delay [s/veh]	21.01		8.04		33.76	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	20.79					
Intersection LOS	C					
Intersection V/C	0.863					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	41.46	39.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.009	2.373
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	515
d_b, Bicycle Delay [s]	6.02	6.04	27.58
l_b,int, Bicycle LOS Score for Intersection	3.378	2.409	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	27.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.919

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	406	192	21	20	118	337	11	70	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	406	192	21	20	118	337	11	70	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	110	52	6	5	32	91	3	19	2
Total Analysis Volume [veh/h]	10	193	16	441	208	23	22	128	366	12	76	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	435	467	479	520	480	537	439
Degree of Utilization, x	0.02	0.45	0.92	0.44	0.31	0.68	0.22

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.07	2.27	10.67	2.26	1.32	5.18	0.81
95th-Percentile Queue Length [ft]	1.76	56.78	266.63	56.44	33.00	129.61	20.34
Approach Delay [s/veh]	16.27		38.41		19.98		13.46
Approach LOS	C		E		C		B
Intersection Delay [s/veh]	27.27						
Intersection LOS	D						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1327	582	0	884	605	0	0	0	677	0	365
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1327	582	0	884	605	0	0	0	677	0	365
Peak Hour Factor	1.0000	0.9520	0.9520	1.0000	0.9520	0.9520	1.0000	1.0000	1.0000	0.9520	1.0000	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	348	153	0	232	159	0	0	0	178	0	96
Total Analysis Volume [veh/h]	0	1394	611	0	929	636	0	0	0	711	0	383
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	112	0	0	112	0	0	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	108	108	108		29	29
g / C, Green / Cycle	0.74	0.74	0.74		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.27	0.18	0.41		0.21	0.14
s, saturation flow rate [veh/h]	5094	5094	1550		3459	2813
c, Capacity [veh/h]	3794	3794	1154		692	563
d1, Uniform Delay [s]	6.50	5.77	7.87		57.93	53.64
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.28	0.15	1.90		23.55	1.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.24	0.55		1.03	0.68
d, Delay for Lane Group [s/veh]	6.77	5.92	9.76		81.47	55.10
Lane Group LOS	A	A	A		F	E
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.82	2.85	8.44		14.94	6.61
50th-Percentile Queue Length [ft/ln]	120.59	71.31	211.05		373.46	165.33
95th-Percentile Queue Length [veh/ln]	8.43	5.13	13.21		21.60	10.83
95th-Percentile Queue Length [ft/ln]	210.64	128.36	330.18		539.95	270.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.77	0.00	0.00	5.92	9.76	0.00	0.00	0.00	81.47	0.00	55.10
Movement LOS		A			A	A				F		E
d_A, Approach Delay [s/veh]	4.78			7.48			0.00			72.24		
Approach LOS	A			A			A			E		
d_I, Intersection Delay [s/veh]	24.03											
Intersection LOS	C											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.74	0.00	63.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.995	0.000	1.447	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1491	1491	0	400
d_b, Bicycle Delay [s]	4.70	4.72	72.46	46.36
l_b,int, Bicycle LOS Score for Intersection	2.326	2.420	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	93.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1385	673	0	1063	597	0	0	0	332	0	849
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1385	673	0	1063	597	0	0	0	332	0	849
Peak Hour Factor	1.0000	0.9330	0.9330	1.0000	0.9330	0.9330	1.0000	1.0000	1.0000	0.9330	1.0000	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	371	180	0	285	160	0	0	0	89	0	227
Total Analysis Volume [veh/h]	0	1484	721	0	1139	640	0	0	0	356	0	910
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	2.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	95	0	0	95	0	0	0	0	25	0	25
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	91	91	116		21	46
g / C, Green / Cycle	0.63	0.63	0.80		0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.49	0.46	0.38		0.10	0.55
s, saturation flow rate [veh/h]	3003	1556	3003		3459	1658
c, Capacity [veh/h]	1886	977	2401		502	525
d1, Uniform Delay [s]	19.81	18.33	4.68		59.03	49.51
k, delay calibration	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	3.40	4.97	0.67		1.87	337.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.74	0.47		0.71	1.73
d, Delay for Lane Group [s/veh]	23.21	23.31	5.36		60.89	387.25
Lane Group LOS	C	C	A		E	F
Critical Lane Group	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	12.42	17.31	3.31		6.39	34.09
50th-Percentile Queue Length [ft/ln]	310.62	432.79	82.87		159.72	852.30
95th-Percentile Queue Length [veh/ln]	18.21	24.14	5.97		10.53	55.79
95th-Percentile Queue Length [ft/ln]	455.13	603.38	149.17		263.35	1394.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.21	23.31	0.00	5.36	0.00	0.00	0.00	0.00	60.89	0.00	387.25
Movement LOS		C	C		A					E		F
d_A, Approach Delay [s/veh]	23.24			3.51			0.00			295.48		
Approach LOS	C			A			A			F		
d_I, Intersection Delay [s/veh]	93.13											
Intersection LOS	F											
Intersection V/C	0.706											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	63.75	63.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.110	1.447	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1601	0	290
d_b, Bicycle Delay [s]	10.05	2.90	72.47	52.99
l_b,int, Bicycle LOS Score for Intersection	2.772	2.186	4.132	1.560
Bicycle LOS	C	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.401

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	15	252	58	152	160	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	252	58	152	160	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	68	16	41	43	2
Total Analysis Volume [veh/h]	16	274	63	165	174	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	624	684	799	675
Degree of Utilization, x	0.03	0.40	0.29	0.27

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	1.93	1.18	1.09
95th-Percentile Queue Length [ft]	1.97	48.35	29.49	27.20
Approach Delay [s/veh]	11.29		9.30	10.29
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.38			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	32.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.282

Intersection Setup

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	683	21	0	596	51	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	683	21	0	596	51	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	171	5	0	149	13	4
Total Analysis Volume [veh/h]	683	21	0	596	51	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.28	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	9.03	0.00	32.71	20.90
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	1.28	1.28
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	32.03	32.03
d_A, Approach Delay [s/veh]	0.00		0.00		30.17	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.44					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	646	50	0	596	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	646	50	0	596	0	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	162	13	0	149	0	1
Total Analysis Volume [veh/h]	646	50	0	596	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.00	0.00	24.36	12.92
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.33	0.33
d_A, Approach Delay [s/veh]	0.00		0.00		12.92	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.02					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	All-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.349

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	27	159	43	11	188	9	39	125	10	3	96	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	159	43	11	188	9	39	125	10	3	96	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	43	12	3	51	2	11	34	3	1	26	3
Total Analysis Volume [veh/h]	29	173	47	12	204	10	42	136	11	3	104	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	713	699	668	660
Degree of Utilization, x	0.35	0.32	0.28	0.18

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.57	1.40	1.16	0.65
95th-Percentile Queue Length [ft]	39.21	35.04	29.03	16.32
Approach Delay [s/veh]	10.74	10.60	10.50	9.64
Approach LOS	B	B	B	A
Intersection Delay [s/veh]	10.47			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.429

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	203	69	37	252	105	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	69	37	252	105	48
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	19	10	70	29	13
Total Analysis Volume [veh/h]	226	77	41	280	117	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	771	748	675
Degree of Utilization, x	0.39	0.43	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.88	2.17	1.00
95th-Percentile Queue Length [ft]	46.99	54.16	24.90
Approach Delay [s/veh]	10.65	11.38	10.13
Approach LOS	B	B	B
Intersection Delay [s/veh]	10.83		
Intersection LOS	B		

Intersection Level Of Service Report
Intersection 292: Ravesnwood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	328.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	4	666	33	19	654	5	19	5	37	5	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	666	33	19	654	5	19	5	37	5	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	179	9	5	176	1	5	1	10	1	0	5
Total Analysis Volume [veh/h]	4	716	35	20	703	5	20	5	40	5	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.93	0.03	0.55	0.90	0.00	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	127.88	65.62	64.32	328.20	233.87	232.70	7.28	0.00	0.00	7.31	0.00	0.00
Movement LOS	F	F	F	F	F	F	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	18.42	18.42	18.42	35.92	35.92	35.92	0.04	0.04	0.04	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	460.47	460.47	460.47	898.08	898.08	898.08	0.99	0.99	0.99	0.25	0.25	0.25
d_A, Approach Delay [s/veh]	65.89			236.45			2.24			1.52		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	141.26											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.383

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	55	2	35	5	0	2	12	236	4	3	137	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	2	35	5	0	2	12	236	4	3	137	24
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	1	11	2	0	1	4	72	1	1	42	7
Total Analysis Volume [veh/h]	67	2	43	6	0	2	15	288	5	4	167	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	721	682	804	798
Degree of Utilization, x	0.16	0.01	0.38	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.55	0.04	1.81	0.99
95th-Percentile Queue Length [ft]	13.70	0.89	45.26	24.77
Approach Delay [s/veh]	8.91	8.34	10.23	9.02
Approach LOS	A	A	B	A
Intersection Delay [s/veh]	9.59			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	12.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	13	19	310	36	16	179
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	19	310	36	16	179
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	5	78	9	4	45
Total Analysis Volume [veh/h]	13	19	310	36	16	179
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.03	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	12.59	10.38	0.00	0.00	7.99	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.17	0.17	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	4.17	4.17	0.00	0.00	0.67	0.67
d_A, Approach Delay [s/veh]	11.28		0.00		0.66	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.85					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.397

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	2	2	344	2	2	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	344	2	2	190
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	86	1	1	48
Total Analysis Volume [veh/h]	2	2	344	2	2	190
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	739	872	842
Degree of Utilization, x	0.01	0.40	0.23

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.02	1.92	0.88
95th-Percentile Queue Length [ft]	0.41	47.95	21.91
Approach Delay [s/veh]	7.90	9.82	8.53
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.35		
Intersection LOS	A		

Vistro File:
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Report File: P:\...\CPM.pdf

Scenario 19 Cumulative (2040) PM

11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SWB Thru	0.868	24.3	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	NEB Left	0.725	29.4	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.833	47.3	D
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.692	51.1	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.495	31.8	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NEB Left	0.654	38.7	D
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	0.745	186.8	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NEB Thru	0.965	122.4	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	EB Thru	0.996	174.5	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	WB Right	1.830	283.9	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.013	51.7	D
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Right	1.895	536.5	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.350	281.5	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	NEB Left	0.656	10.7	B
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.511	14.8	B
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.643	18.2	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.544	13.8	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NEB Thru	0.744	59.0	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SEB Thru	0.669	61.0	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	SEB Thru	0.748	26.2	C
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	6.917	39.6	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	NWB Left	0.677	33.3	C
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	SEB Left	0.666	28.4	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.614	11.5	B
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NWB Left	0.794	40.1	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.561	11.9	B
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.654	18.8	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.453	7.6	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.670	14.7	B
39	Sand Hill Rd/Santa Cruz Ave	Signalized	HCM 7th Edition	NWB Left	0.750	43.1	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	EB Right	0.918	32.4	D
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NEB Thru	0.868	54.5	D
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	NEB Thru	0.753	39.6	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.917	23.0	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	SWB Left	0.936	30.4	D
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.862	38.7	D
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.681	89.2	F

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.430	10.6	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.043	15.2	C
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Right	0.035	12.2	B
254	Laurel Street and Glenwood Ave	All-way stop	HCM 7th Edition	SEB Thru	0.500	13.2	B
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	NEB Thru	0.601	12.7	B
292	Ravesnwood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SWB Left	0.025	25.3	D
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.462	11.3	B
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	NWB Thru	0.004	0.0	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.457	10.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.868

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	894	1133	279	1614	593
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	894	1133	279	1614	593
Peak Hour Factor	1.0000	0.9720	0.9720	1.0000	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	230	291	70	415	153
Total Analysis Volume [veh/h]	0	920	1166	279	1660	610
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	100	100	0	100	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	40	40	0	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	5	0
Pedestrian Clearance [s]	0	12	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	45	43	50	50
g / C, Green / Cycle	0.45	0.43	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.23	0.33	0.48	0.38
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	1809	1536	1739	799
d1, Uniform Delay [s]	19.50	24.07	23.79	20.08
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.03	3.58	1.61	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.76	0.95	0.76
d, Delay for Lane Group [s/veh]	20.53	27.65	25.41	20.66
Lane Group LOS	C	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.49	11.76	17.85	10.96
50th-Percentile Queue Length [ft/ln]	187.24	294.10	446.32	273.98
95th-Percentile Queue Length [veh/ln]	11.98	17.39	24.78	16.39
95th-Percentile Queue Length [ft/ln]	299.45	434.73	619.56	409.71

Movement, Approach, & Intersection Results

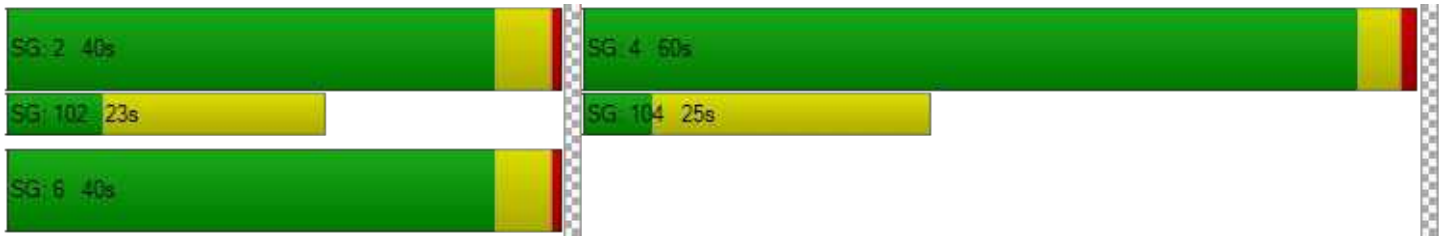
d_M, Delay for Movement [s/veh]	0.00	20.53	27.65	0.00	25.41	20.66
Movement LOS		C	C		C	C
d_A, Approach Delay [s/veh]	20.53		27.65		24.13	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	24.31					
Intersection LOS	C					
Intersection V/C	0.868					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.43	0.00	39.63
l_p,int, Pedestrian LOS Score for Intersectio	2.904	0.000	2.683
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1117
d_b, Bicycle Delay [s]	20.95	20.90	9.74
l_b,int, Bicycle LOS Score for Intersection	2.319	2.522	1.560
Bicycle LOS	B	B	A

Sequence

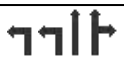
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	57	1074	2	157	1164	276	15	12	291	300	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	1074	2	157	1164	276	15	12	291	300	6	2
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	279	1	41	302	72	4	3	76	78	2	1
Total Analysis Volume [veh/h]	59	1115	2	163	1209	287	16	12	302	312	6	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	57	0	20	62	0	0	36	0	0	32	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	145	145	145	145	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	88	88	11	91	91	20	20	18	18
g / C, Green / Cycle	0.06	0.61	0.61	0.07	0.63	0.63	0.14	0.14	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.21	0.21	0.05	0.41	0.42	0.02	0.11	0.09	0.09
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1733	1818	2813	1781	1781
c, Capacity [veh/h]	100	2171	1139	256	1174	1088	250	387	220	220
d1, Uniform Delay [s]	66.72	13.88	13.88	65.12	16.90	17.41	54.69	60.33	61.07	61.07
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.13	0.42	0.80	0.98	2.77	3.37	0.15	2.60	3.39	3.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.34	0.34	0.64	0.65	0.68	0.11	0.78	0.73	0.73
d, Delay for Lane Group [s/veh]	70.85	14.31	14.69	66.10	19.67	20.78	54.84	62.92	64.46	64.46
Lane Group LOS	E	B	B	E	B	C	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.24	5.95	6.36	2.96	16.14	16.19	0.92	5.56	5.94	5.94
50th-Percentile Queue Length [ft/ln]	56.07	148.68	159.06	73.89	403.55	404.78	23.03	138.99	148.44	148.48
95th-Percentile Queue Length [veh/ln]	4.04	9.95	10.50	5.32	22.73	22.79	1.66	9.43	9.93	9.94
95th-Percentile Queue Length [ft/ln]	100.93	248.67	262.48	133.00	568.28	569.75	41.46	235.67	248.35	248.39

Movement, Approach, & Intersection Results

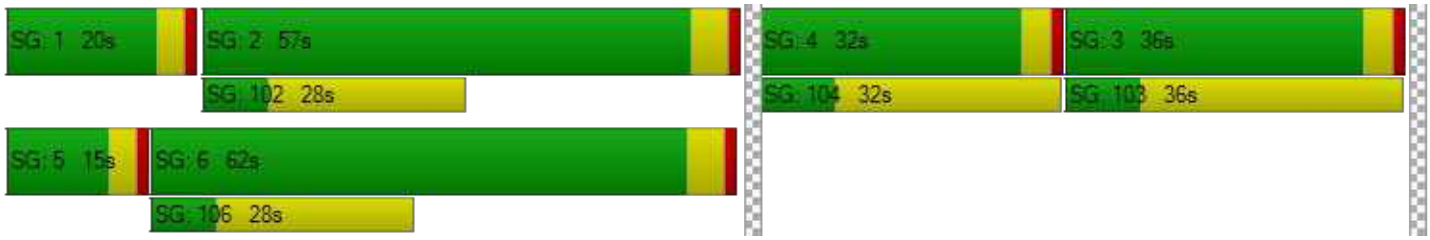
d_M, Delay for Movement [s/veh]	70.85	14.44	14.69	66.10	20.08	20.78	54.84	54.84	62.92	64.46	64.46	64.46
Movement LOS	E	B	B	E	C	C	D	D	E	E	E	E
d_A, Approach Delay [s/veh]	17.27			24.73			62.24			64.46		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	29.41											
Intersection LOS	C											
Intersection V/C	0.725											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.93	60.93	61.85	61.85
l_p,int, Pedestrian LOS Score for Intersectio	2.931	3.167	2.404	2.147
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	718	787	439	384
d_b, Bicycle Delay [s]	29.77	26.66	44.13	47.30
l_b,int, Bicycle LOS Score for Intersection	2.206	2.928	2.104	2.088
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	271	626	93	18	933	359	466	49	180	99	83	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	271	626	93	18	933	359	466	49	180	99	83	45
Peak Hour Factor	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	171	25	5	254	98	127	13	49	27	23	12
Total Analysis Volume [veh/h]	296	683	101	20	1017	391	508	53	196	108	91	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	50	50	50	50	50	50	50	50	50	0	50	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	45	45	22	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	84	84	4	68	68	27	27	27	16	16
g / C, Green / Cycle	0.14	0.60	0.60	0.03	0.49	0.49	0.19	0.19	0.19	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.17	0.21	0.22	0.01	0.39	0.41	0.16	0.16	0.13	0.06	0.08
s, saturation flow rate [veh/h]	1781	1870	1775	1781	1870	1668	1781	1797	1558	1781	1748
c, Capacity [veh/h]	255	1123	1067	54	913	814	347	351	304	208	204
d1, Uniform Delay [s]	60.04	14.22	14.24	66.62	30.15	30.91	53.86	53.83	51.79	58.21	59.44
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	76.35	0.89	0.94	1.55	7.33	9.69	3.30	3.23	1.71	1.49	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.16	0.36	0.36	0.37	0.80	0.83	0.80	0.80	0.64	0.52	0.69
d, Delay for Lane Group [s/veh]	136.39	15.10	15.19	68.17	37.48	40.60	57.16	57.06	53.49	59.71	62.48
Lane Group LOS	F	B	B	E	D	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.40	6.60	6.33	0.72	22.00	21.32	9.83	9.88	6.55	3.73	5.00
50th-Percentile Queue Length [ft/ln]	360.07	164.93	158.35	18.09	549.98	532.94	245.71	247.00	163.85	93.34	125.00
95th-Percentile Queue Length [veh/ln]	22.04	10.81	10.46	1.30	29.69	28.89	14.97	15.03	10.75	6.72	8.67
95th-Percentile Queue Length [ft/ln]	550.93	270.24	261.54	32.57	742.29	722.24	374.25	375.87	268.81	168.02	216.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	136.39	15.14	15.19	68.17	38.36	40.60	57.12	57.06	53.49	59.71	62.48	62.48
Movement LOS	F	B	B	E	D	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	48.38			39.39			56.17			61.27		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	47.31											
Intersection LOS	D											
Intersection V/C	0.833											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.47	59.47	59.47	59.47
l_p,int, Pedestrian LOS Score for Intersectio	2.929	3.049	2.464	2.076
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	457	468
d_b, Bicycle Delay [s]	35.48	35.50	41.76	41.10
l_b,int, Bicycle LOS Score for Intersection	2.451	2.738	2.809	1.969
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	51.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	3	677	60	429	755	39	101	24	5	43	90	216
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	677	60	429	755	39	101	24	5	43	90	216
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	174	15	110	194	10	26	6	1	11	23	56
Total Analysis Volume [veh/h]	3	697	62	442	778	40	104	25	5	44	93	222
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing m	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	4.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	105	70	105	35	105	70	45	45	45	0	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	0	7	0	0	0	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	0	17	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	70	70	32	105	105	41	41
g / C, Green / Cycle	0.46	0.46	0.21	0.70	0.70	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.25	0.22	0.22	0.21	0.20
s, saturation flow rate [veh/h]	1864	1644	1781	1870	1833	644	1751
c, Capacity [veh/h]	889	762	380	1303	1277	218	504
d1, Uniform Delay [s]	27.51	27.58	58.99	8.83	8.84	54.38	50.17
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.38	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.68	2.07	98.60	0.64	0.65	9.42	6.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.47	1.16	0.32	0.32	0.61	0.71
d, Delay for Lane Group [s/veh]	29.19	29.65	157.59	9.47	9.50	63.81	56.45
Lane Group LOS	C	C	F	A	A	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.32	9.24	24.74	5.25	5.18	5.53	13.28
50th-Percentile Queue Length [ft/ln]	257.89	230.98	618.41	131.35	129.57	138.27	331.88
95th-Percentile Queue Length [veh/ln]	15.58	14.22	35.69	9.01	8.92	9.39	19.25
95th-Percentile Queue Length [ft/ln]	389.57	355.61	892.22	225.32	222.91	234.70	481.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.19	29.39	29.65	157.59	9.48	9.50	63.81	63.81	63.81	56.45	56.45	56.45
Movement LOS	C	C	C	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	29.41			61.44			63.81			56.45		
Approach LOS	C			E			E			E		
d_I, Intersection Delay [s/veh]	51.15											
Intersection LOS	D											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	99.9	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	64.40	8.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.992	1.771	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	865	1332	537	537
d_b, Bicycle Delay [s]	24.15	8.37	40.21	40.13
l_b,int, Bicycle LOS Score for Intersection	2.188	2.599	1.781	2.152
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	116	500	239	398	407	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	500	239	398	407	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	132	63	105	107	19
Total Analysis Volume [veh/h]	122	526	252	419	428	77
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing m	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lag	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	35	34	34	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	39	38	38	91	53	0
Vehicle Extension [s]	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	6.1	0.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	Yes	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	4.50	8.10	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.50	6.10	0.00
g_i, Effective Green Time [s]	30	56	22	90	70
g / C, Green / Cycle	0.23	0.43	0.17	0.69	0.54
(v / s)_i Volume / Saturation Flow Rate	0.07	0.33	0.14	0.22	0.28
s, saturation flow rate [veh/h]	1781	1573	1781	1870	1809
c, Capacity [veh/h]	406	644	295	1299	979
d1, Uniform Delay [s]	41.61	33.93	52.70	7.82	19.00
k, delay calibration	0.04	0.50	0.12	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	10.97	7.46	0.66	1.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.82	0.85	0.32	0.52
d, Delay for Lane Group [s/veh]	41.76	44.90	60.16	8.48	20.94
Lane Group LOS	D	D	E	A	C
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.29	16.49	8.54	4.51	9.95
50th-Percentile Queue Length [ft/ln]	82.34	412.19	213.56	112.72	248.75
95th-Percentile Queue Length [veh/ln]	5.93	23.15	13.34	7.99	15.12
95th-Percentile Queue Length [ft/ln]	148.21	578.67	333.39	199.78	378.08

Movement, Approach, & Intersection Results

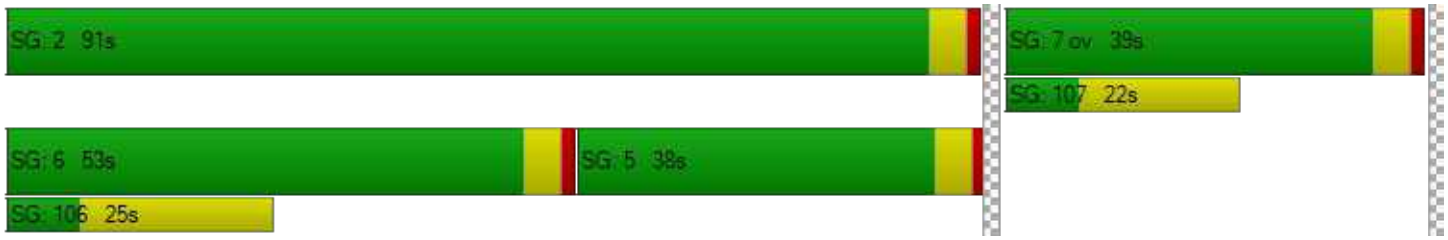
d_M, Delay for Movement [s/veh]	41.76	44.90	60.16	8.48	20.94	20.94
Movement LOS	D	D	E	A	C	C
d_A, Approach Delay [s/veh]	44.31		27.89		20.94	
Approach LOS	D		C		C	
d_I, Intersection Delay [s/veh]	31.80					
Intersection LOS	C					
Intersection V/C	0.495					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.275	2.611	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	531	1331	746
d_b, Bicycle Delay [s]	35.28	7.38	25.67
l_b,int, Bicycle LOS Score for Intersection	1.560	2.667	2.393
Bicycle LOS	A	B	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	38.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	95	35	18	257	7	349	21	585	121	367	537	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	35	18	257	7	349	21	585	121	367	537	4
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	9	5	68	2	93	6	156	32	98	143	1
Total Analysis Volume [veh/h]	101	37	19	273	7	371	22	622	129	390	571	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing m	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	35	35	35	50	35	50	10	35	35	10	50	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	53	38	53	82	38	82	10	53	38	39	82	0
Vehicle Extension [s]	3.0	3.0	3.0	2.5	3.0	2.5	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	6.1	0.0	6.1	0.0	0.0	0.0	0.5	6.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		Yes	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	8.10	8.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	6.10	6.10
g_i, Effective Green Time [s]	41	41	41	41	5	51	51	32	72	72
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.04	0.39	0.39	0.25	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.10	0.03	0.24	0.24	0.01	0.17	0.08	0.22	0.15	0.15
s, saturation flow rate [veh/h]	1005	1746	1188	1545	1781	3560	1525	1781	1870	1864
c, Capacity [veh/h]	131	546	426	484	72	1393	596	438	1035	1032
d1, Uniform Delay [s]	61.31	31.70	42.97	40.03	60.61	29.19	26.22	47.33	15.30	15.31
k, delay calibration	0.11	0.11	0.35	0.36	0.04	0.50	0.50	0.35	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.10	0.08	5.42	8.17	0.89	1.04	0.83	17.48	0.67	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.10	0.66	0.77	0.31	0.45	0.22	0.89	0.28	0.28
d, Delay for Lane Group [s/veh]	70.41	31.78	48.39	48.20	61.49	30.23	27.05	64.80	15.97	15.98
Lane Group LOS	E	C	D	D	E	C	C	E	B	B
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.73	1.31	8.87	11.72	0.72	7.31	2.78	14.17	4.61	4.60
50th-Percentile Queue Length [ft/ln]	93.33	32.70	221.69	292.94	18.01	182.65	69.62	354.24	115.27	115.02
95th-Percentile Queue Length [veh/ln]	6.72	2.35	13.75	17.33	1.30	11.74	5.01	20.34	8.13	8.12
95th-Percentile Queue Length [ft/ln]	167.99	58.86	343.78	433.29	32.41	293.47	125.32	508.58	203.31	202.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.41	31.78	31.78	48.39	48.39	48.20	61.49	30.23	27.05	64.80	15.97	15.98
Movement LOS	E	C	C	D	D	D	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	56.63			48.28			30.59			35.71		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	38.66											
Intersection LOS	D											
Intersection V/C	0.654											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.46	54.46	54.46	54.46
l_p,int, Pedestrian LOS Score for Intersectio	1.999	2.350	3.266	2.930
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	746	1192
d_b, Bicycle Delay [s]	35.90	36.19	25.78	10.67
l_b,int, Bicycle LOS Score for Intersection	1.819	2.634	2.197	2.356
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	186.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	1	97	10	2	68	9	683	8	78	670	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	1	97	10	2	68	9	683	8	78	670	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	0	27	3	1	19	3	190	2	22	186	1
Total Analysis Volume [veh/h]	38	1	108	11	2	76	10	759	9	87	744	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

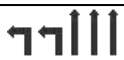
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.75	0.01	0.26	0.23	0.02	0.19	0.01	0.01	0.00	0.10	0.01	0.00
d_M, Delay for Movement [s/veh]	186.80	160.77	124.89	94.83	62.70	27.49	9.22	0.00	0.00	9.74	0.00	0.00
Movement LOS	F	F	F	F	F	D	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	7.59	7.59	7.59	2.09	2.09	2.09	0.04	0.00	0.00	0.34	0.00	0.00
95th-Percentile Queue Length [ft/ln]	189.85	189.85	189.85	52.15	52.15	52.15	0.88	0.00	0.00	8.57	0.00	0.00
d_A, Approach Delay [s/veh]	141.14			36.60			0.12			1.02		
Approach LOS	F			E			A			A		
d_I, Intersection Delay [s/veh]	13.51											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	122.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.965

Intersection Setup

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3728	95	333	1102	87	1378
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3728	95	333	1102	87	1378
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	951	24	85	281	22	352
Total Analysis Volume [veh/h]	3804	97	340	1124	89	1406
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	200
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	198.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	175	50	50	50	50	50
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	124	154	30	154	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	0	4	4
Pedestrian Clearance [s]	35	5	0	5	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	296	296	296	296	296	296
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	178	178	51	233	53	108
g / C, Green / Cycle	0.60	0.60	0.17	0.79	0.18	0.36
(v / s)_i Volume / Saturation Flow Rate	0.75	0.06	0.10	0.22	0.03	0.33
s, saturation flow rate [veh/h]	5094	1578	3459	5094	3459	4220
c, Capacity [veh/h]	3063	949	601	4011	620	1497
d1, Uniform Delay [s]	58.97	25.04	111.94	8.58	102.29	92.35
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	109.52	0.05	0.84	0.04	0.11	6.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.24	0.10	0.57	0.28	0.14	0.94
d, Delay for Lane Group [s/veh]	168.49	25.09	112.78	8.62	102.39	98.84
Lane Group LOS	F	C	F	A	F	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	104.68	2.98	12.11	6.48	2.95	35.99
50th-Percentile Queue Length [ft/ln]	2617.01	74.55	302.83	162.02	73.72	899.74
95th-Percentile Queue Length [veh/ln]	144.40	5.37	17.82	10.66	5.31	45.83
95th-Percentile Queue Length [ft/ln]	3609.98	134.20	445.53	266.39	132.70	1145.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	168.49	25.09	112.78	8.62	102.39	98.84
Movement LOS	F	C	F	A	F	F
d_A, Approach Delay [s/veh]	164.93		32.81		99.05	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	122.37					
Intersection LOS	F					
Intersection V/C	0.965					

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	140.06	0.00	139.09
l_p,int, Pedestrian LOS Score for Intersectio	3.955	0.000	3.055
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	777	1001	264
d_b, Bicycle Delay [s]	55.30	36.93	111.52
l_b,int, Bicycle LOS Score for Intersection	3.705	2.365	1.670
Bicycle LOS	D	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	174.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.996

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	116	17	1350	49	191	82	32	2089	490	388	977	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	17	1350	49	191	82	32	2089	490	388	977	6
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	4	351	13	50	21	8	543	127	101	254	2
Total Analysis Volume [veh/h]	121	18	1405	51	199	85	33	2174	510	404	1017	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing m	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	9	15	43	4	11	11	68	40	40	68	60	60
g / C, Green / Cycle	0.09	0.15	0.42	0.04	0.11	0.11	0.66	0.39	0.39	0.66	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.07	0.01	0.34	0.03	0.12	0.06	0.03	0.70	0.53	0.28	0.20	0.00
s, saturation flow rate [veh/h]	1781	1593	4184	1781	1593	1464	1158	3097	966	1451	5094	1589
c, Capacity [veh/h]	154	232	1743	68	168	154	767	1212	378	1020	3000	936
d1, Uniform Delay [s]	45.80	37.75	26.06	48.72	45.76	43.26	6.44	31.12	31.12	17.18	10.80	8.67
k, delay calibration	0.11	0.11	0.23	0.11	0.13	0.11	0.11	0.14	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.59	0.14	1.95	15.47	99.46	3.07	0.02	357.93	173.33	0.25	0.07	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.08	0.81	0.75	1.19	0.55	0.04	1.79	1.35	0.40	0.34	0.01
d, Delay for Lane Group [s/veh]	54.39	37.89	28.00	64.20	145.22	46.33	6.47	389.04	204.45	17.43	10.86	8.68
Lane Group LOS	D	D	C	E	F	D	A	F	F	B	B	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	3.30	0.19	9.59	1.60	4.46	2.19	0.11	49.72	27.15	1.55	3.73	0.05
50th-Percentile Queue Length [ft/ln]	82.53	4.87	239.73	39.91	111.58	54.80	2.84	1243.09	678.75	38.77	93.27	1.34
95th-Percentile Queue Length [veh/ln]	5.94	0.35	14.67	2.87	8.03	3.95	0.20	80.90	42.45	2.79	6.72	0.10
95th-Percentile Queue Length [ft/ln]	148.55	8.77	366.70	71.84	200.85	98.65	5.11	2022.53	1061.23	69.79	167.88	2.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.39	37.89	28.00	64.20	145.22	46.33	6.47	389.04	204.45	17.43	10.86	8.68
Movement LOS	D	D	C	E	F	D	A	F	F	B	B	A
d_A, Approach Delay [s/veh]	30.18			107.79			349.75			12.71		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	174.52											
Intersection LOS	F											
Intersection V/C	0.996											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.47	0.00	42.47	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.372	0.000	3.183	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	736	605	2917	1782
d_b, Bicycle Delay [s]	20.41	24.89	10.74	0.61
l_b,int, Bicycle LOS Score for Intersection	2.833	1.836	3.054	2.344
Bicycle LOS	C	A	C	B

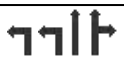
Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	283.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.830

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	144	1248	21	330	692	104	62	9	70	69	16	454
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	1248	21	330	692	104	62	9	70	69	16	454
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	326	5	86	181	27	16	2	18	18	4	119
Total Analysis Volume [veh/h]	150	1304	22	345	723	109	65	9	73	72	17	474
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			86			11			85		
v_di, Inbound Pedestrian Volume crossing m	11			85			12			86		
v_co, Outbound Pedestrian Volume crossing	13			14			14			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			14			14			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			18			7			15		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	85	79	16	79	85	32	32	32	32	32	32
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	92	77	77	92	83	83	31	31	31	31
g / C, Green / Cycle	0.71	0.59	0.59	0.71	0.64	0.64	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.45	0.79	0.80	0.38	0.51	0.52	0.07	0.12	0.06	0.82
s, saturation flow rate [veh/h]	334	837	831	906	837	786	905	692	1284	599
c, Capacity [veh/h]	282	497	494	247	536	503	55	164	194	143
d1, Uniform Delay [s]	19.03	26.34	26.34	35.03	17.07	17.40	64.89	42.84	52.98	49.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.02	164.79	166.34	201.77	11.50	13.09	110.67	0.87	1.17	1113.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	1.34	1.34	1.40	0.79	0.81	1.17	0.50	0.37	3.44
d, Delay for Lane Group [s/veh]	26.05	191.13	192.68	236.81	28.57	30.49	175.57	43.71	54.16	1163.35
Lane Group LOS	C	F	F	F	C	C	F	D	D	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.73	36.60	36.57	8.04	10.43	10.33	3.56	2.35	2.01	48.87
50th-Percentile Queue Length [ft/ln]	43.29	915.10	914.14	201.06	260.74	258.33	88.99	58.83	50.32	1221.67
95th-Percentile Queue Length [veh/ln]	3.12	56.73	56.75	14.48	15.73	15.61	6.41	4.24	3.62	80.75
95th-Percentile Queue Length [ft/ln]	77.91	1418.33	1418.80	361.91	393.15	390.13	160.18	105.90	90.58	2018.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.05	191.89	192.68	236.81	29.36	30.49	175.57	43.71	43.71	54.16	1163.35	1163.35
Movement LOS	C	F	F	F	C	C	F	D	D	D	F	F
d_A, Approach Delay [s/veh]	175.05			90.27			102.02			1021.50		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	283.89											
Intersection LOS	F											
Intersection V/C	1.830											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
l_p,int, Pedestrian LOS Score for Intersectio	3.149	3.126	2.212	2.638
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1155	443	447
d_b, Bicycle Delay [s]	9.21	11.70	39.48	39.48
l_b,int, Bicycle LOS Score for Intersection	2.777	2.531	1.802	2.489
Bicycle LOS	C	B	A	B

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	51.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.013

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	133	1322	784	281	64	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	1322	784	281	64	79
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	342	203	73	17	20
Total Analysis Volume [veh/h]	138	1367	811	291	66	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing m	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	115	95	95	30	30
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	17	122	102	102	16	16
g / C, Green / Cycle	0.12	0.84	0.70	0.70	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.11	0.86	0.66	0.73	0.07	0.09
s, saturation flow rate [veh/h]	1265	1593	837	753	994	893
c, Capacity [veh/h]	148	1341	589	530	109	98
d1, Uniform Delay [s]	63.36	11.46	18.61	21.45	61.47	63.01
k, delay calibration	0.24	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.24	29.60	24.22	49.55	1.99	6.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	1.02	0.94	1.04	0.60	0.84
d, Delay for Lane Group [s/veh]	99.60	41.06	42.83	71.01	63.46	69.82
Lane Group LOS	F	F	D	F	E	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.48	18.39	17.83	22.69	2.39	3.15
50th-Percentile Queue Length [ft/ln]	162.03	459.65	445.73	567.15	59.73	78.79
95th-Percentile Queue Length [veh/ln]	10.66	25.87	24.75	31.52	4.30	5.67
95th-Percentile Queue Length [ft/ln]	266.40	646.69	618.85	788.01	107.52	141.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	99.60	41.06	51.86	71.01	63.46	69.82
Movement LOS	F	F	D	E	E	E
d_A, Approach Delay [s/veh]	46.43		56.92		66.98	
Approach LOS	D		E		E	
d_I, Intersection Delay [s/veh]	51.73					
Intersection LOS	D					
Intersection V/C	1.013					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.75	63.75	61.89
l_p,int, Pedestrian LOS Score for Intersectio	2.947	2.979	2.150
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1532	1256	373
d_b, Bicycle Delay [s]	3.97	10.06	48.03
l_b,int, Bicycle LOS Score for Intersection	2.801	2.469	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	536.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.895

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1348	410	68	856	702	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1348	410	68	856	702	77
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	342	104	17	217	178	20
Total Analysis Volume [veh/h]	1367	416	69	868	712	78
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	110	110	21	124	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	108	108	16	124	21	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	104	104	13	120	18	18
g / C, Green / Cycle	0.72	0.72	0.09	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.05	0.74	0.11	0.67	0.62	0.62
s, saturation flow rate [veh/h]	1302	561	647	1293	647	632
c, Capacity [veh/h]	933	402	58	1070	79	78
d1, Uniform Delay [s]	20.59	19.21	66.07	6.57	63.71	63.71
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	215.08	54.26	136.19	6.70	1831.09	1851.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.46	1.04	1.18	0.81	5.01	5.05
d, Delay for Lane Group [s/veh]	235.66	73.47	202.26	13.27	1894.80	1915.49
Lane Group LOS	F	F	F	B	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	41.17	16.74	4.35	5.77	43.36	42.80
50th-Percentile Queue Length [ft/ln]	1029.28	418.52	108.82	144.17	1084.11	1069.90
95th-Percentile Queue Length [veh/ln]	66.78	24.14	7.84	9.71	68.83	67.99
95th-Percentile Queue Length [ft/ln]	1669.51	603.45	195.88	242.63	1720.63	1699.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	235.66	73.47	202.26	13.27	1903.93	1915.49
Movement LOS	F	F	F	B	F	F
d_A, Approach Delay [s/veh]	197.82		27.19		1905.07	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	536.52					
Intersection LOS	F					
Intersection V/C	1.895					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	61.98
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.377
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1654	245
d_b, Bicycle Delay [s]	5.84	2.18	55.91
l_b,int, Bicycle LOS Score for Intersection	3.031	2.333	2.863
Bicycle LOS	C	B	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	281.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.350

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	312	1360	493	93	1202	17	44	177	523	478	178	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	1360	493	93	1202	17	44	177	523	478	178	55
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	83	362	131	25	320	5	12	47	139	127	47	15
Total Analysis Volume [veh/h]	332	1447	524	99	1279	18	47	188	556	509	189	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11			20			10			19		
v_di, Inbound Pedestrian Volume crossing m	10			19			11			20		
v_co, Outbound Pedestrian Volume crossing	3			7			7			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			7			7			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	140.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	4
Maximum Green [s]	21	40	40	21	40	40	5	25	25	5	21	5
Amber [s]	3.0	4.4	4.4	3.0	4.0	4.0	3.0	3.6	3.6	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0
Split [s]	31	51	51	14	34	34	14	34	34	51	31	51
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.4	3.4	1.0	3.0	3.0	2.0	2.6	2.6	2.0	1.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.40	5.40	3.00	5.00	5.00	4.00	4.60	4.60	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.40	3.40	1.00	3.00	3.00	2.00	2.60	2.60	2.00	1.00	1.00
g_i, Effective Green Time [s]	28	46	46	11	29	29	9	33	33	48	24	24
g / C, Green / Cycle	0.22	0.35	0.35	0.08	0.23	0.23	0.07	0.25	0.25	0.37	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.26	0.53	0.55	0.11	0.45	0.46	0.04	0.19	0.36	0.15	0.14	0.04
s, saturation flow rate [veh/h]	1265	2530	1156	937	1874	974	1132	984	1526	3357	1329	1461
c, Capacity [veh/h]	273	899	411	79	427	222	55	249	386	1228	244	269
d1, Uniform Delay [s]	51.00	41.90	41.90	59.50	50.20	50.20	65.00	44.82	47.90	30.81	50.48	44.96
k, delay calibration	0.50	0.50	0.50	0.15	0.50	0.50	0.11	0.21	0.50	0.11	0.17	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	126.73	223.13	261.32	139.82	457.58	467.58	27.92	8.77	211.86	0.22	7.80	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.22	1.48	1.55	1.25	2.00	2.00	0.85	0.75	1.44	0.41	0.77	0.22
d, Delay for Lane Group [s/veh]	177.73	265.04	303.22	199.32	507.79	517.78	92.92	53.59	259.76	31.04	58.27	45.12
Lane Group LOS	F	F	F	F	F	F	F	D	F	C	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.28	41.79	42.53	5.71	34.09	36.06	2.01	6.20	35.01	6.03	6.39	1.64
50th-Percentile Queue Length [ft/ln]	456.92	1044.69	1063.29	142.85	852.20	901.62	50.28	154.88	875.25	150.79	159.69	41.01
95th-Percentile Queue Length [veh/ln]	27.92	64.80	66.90	10.29	55.86	58.84	3.62	10.28	53.51	10.06	10.53	2.95
95th-Percentile Queue Length [ft/ln]	697.97	1619.97	1672.54	257.13	1396.44	1470.98	90.50	256.93	1337.80	251.49	263.31	73.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	177.73	268.06	303.22	199.32	511.12	517.78	92.92	53.59	259.76	31.04	58.27	45.12
Movement LOS	F	F	F	F	F	F	F	D	F	C	E	D
d_A, Approach Delay [s/veh]	263.04			489.09			200.85			38.93		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	281.47											
Intersection LOS	F											
Intersection V/C	1.350											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.476	3.022	2.473	2.727
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	702	446	452	431
d_b, Bicycle Delay [s]	27.40	39.33	39.00	40.14
l_b,int, Bicycle LOS Score for Intersection	2.826	2.327	2.865	2.809
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	52	965	956	406	312	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	965	956	406	312	54
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	259	256	109	84	14
Total Analysis Volume [veh/h]	56	1035	1026	436	335	58
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	13	100	87	87	40	40
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	31	31	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	49	49	49	49	49	49
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	28	22	22	11	11
g / C, Green / Cycle	0.04	0.57	0.46	0.46	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.03	0.29	0.29	0.28	0.19	0.04
s, saturation flow rate [veh/h]	1781	3560	3560	1550	1781	1566
c, Capacity [veh/h]	78	2040	1628	709	407	358
d1, Uniform Delay [s]	23.06	6.29	10.11	9.92	17.91	15.09
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.46	0.28	0.58	1.24	1.61	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.51	0.63	0.62	0.82	0.16
d, Delay for Lane Group [s/veh]	27.52	6.57	10.69	11.16	19.52	15.17
Lane Group LOS	C	A	B	B	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.68	2.20	3.19	2.79	3.31	0.46
50th-Percentile Queue Length [ft/ln]	16.98	54.91	79.70	69.83	82.63	11.58
95th-Percentile Queue Length [veh/ln]	1.22	3.95	5.74	5.03	5.95	0.83
95th-Percentile Queue Length [ft/ln]	30.56	98.85	143.47	125.70	148.73	20.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.52	6.57	10.69	11.16	19.52	15.17
Movement LOS	C	A	B	B	B	B
d_A, Approach Delay [s/veh]	7.64		10.83		18.88	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	10.72					
Intersection LOS	B					
Intersection V/C	0.656					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	14.62
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.193
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3876	3343	1468
d_b, Bicycle Delay [s]	21.56	11.02	1.73
l_b,int, Bicycle LOS Score for Intersection	2.460	2.766	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.511

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	687	1	46	644	14	49	34	14	27	40	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	687	1	46	644	14	49	34	14	27	40	37
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	183	0	12	172	4	13	9	4	7	11	10
Total Analysis Volume [veh/h]	4	732	1	49	687	15	52	36	15	29	43	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	0	30	30	2	32	5	5	5	6	6
g / C, Green / Cycle	0.00	0.49	0.49	0.04	0.53	0.08	0.08	0.08	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.00	0.20	0.20	0.03	0.38	0.02	0.02	0.01	0.02	0.05
s, saturation flow rate [veh/h]	1781	1870	1869	1781	1862	1781	1853	1461	1781	1685
c, Capacity [veh/h]	8	920	919	68	978	140	146	115	174	165
d1, Uniform Delay [s]	30.41	9.84	9.84	29.14	11.08	26.66	26.64	26.25	25.35	26.21
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	37.01	0.60	0.60	13.40	2.13	1.25	1.17	0.51	0.45	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.40	0.40	0.72	0.72	0.31	0.30	0.13	0.17	0.50
d, Delay for Lane Group [s/veh]	67.42	10.44	10.44	42.53	13.22	27.91	27.81	26.76	25.80	28.54
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.14	2.86	2.86	0.94	6.64	0.66	0.67	0.22	0.39	1.20
50th-Percentile Queue Length [ft/ln]	3.57	71.56	71.53	23.52	166.04	16.49	16.67	5.57	9.87	29.92
95th-Percentile Queue Length [veh/ln]	0.26	5.15	5.15	1.69	10.87	1.19	1.20	0.40	0.71	2.15
95th-Percentile Queue Length [ft/ln]	6.43	128.80	128.75	42.33	271.71	29.68	30.01	10.03	17.76	53.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.42	10.44	10.44	42.53	13.22	13.22	27.90	27.81	26.76	25.80	28.54	28.54
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.75			15.13			27.70			27.82		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.82											
Intersection LOS	B											
Intersection V/C	0.511											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.50	20.50	20.50	20.50
l_p,int, Pedestrian LOS Score for Intersectio	2.408	2.644	2.123	1.972
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	983	983
d_b, Bicycle Delay [s]	13.81	13.85	7.89	7.89
l_b,int, Bicycle LOS Score for Intersection	2.168	2.799	1.730	1.743
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	32	624	5	9	546	137	211	7	52	9	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	624	5	9	546	137	211	7	52	9	8	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	164	1	2	144	36	56	2	14	2	2	2
Total Analysis Volume [veh/h]	34	657	5	9	575	144	222	7	55	9	8	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing m	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	90	90	90	90	90	90	30	30	30	0	30	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	86	86	86	86	26	26
g / C, Green / Cycle	0.72	0.72	0.72	0.72	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.35	0.01	0.40	0.20	0.01
s, saturation flow rate [veh/h]	733	1867	773	1792	1391	1696
c, Capacity [veh/h]	433	1337	479	1283	353	407
d1, Uniform Delay [s]	15.16	7.48	12.70	8.06	45.90	37.39
k, delay calibration	0.50	0.50	0.50	0.50	0.40	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	1.31	0.07	1.77	14.42	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.50	0.02	0.56	0.80	0.06
d, Delay for Lane Group [s/veh]	15.52	8.79	12.77	9.83	60.33	37.45
Lane Group LOS	B	A	B	A	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.53	7.46	0.12	8.53	9.69	0.58
50th-Percentile Queue Length [ft/ln]	13.28	186.58	3.05	213.13	242.29	14.45
95th-Percentile Queue Length [veh/ln]	0.96	11.94	0.22	13.31	14.80	1.04
95th-Percentile Queue Length [ft/ln]	23.90	298.58	5.50	332.84	369.93	26.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.52	8.79	8.79	12.77	9.83	9.83	60.33	60.33	60.33	37.45	37.45	37.45
Movement LOS	B	A	A	B	A	A	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	9.12			9.87			60.33			37.45		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	18.22											
Intersection LOS	B											
Intersection V/C	0.643											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.45	49.45	49.45	49.45
l_p,int, Pedestrian LOS Score for Intersectio	2.328	2.794	2.006	1.760
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1433	432	432
d_b, Bicycle Delay [s]	4.84	4.83	36.92	36.92
l_b,int, Bicycle LOS Score for Intersection	2.708	2.761	2.028	1.599
Bicycle LOS	B	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	505	129	33	541	7	76	108	3	130	45	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	505	129	33	541	7	76	108	3	130	45	129
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	134	34	9	143	2	20	29	1	34	12	34
Total Analysis Volume [veh/h]	3	534	137	35	572	7	80	114	3	138	48	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing m	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	69
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	23	23	23	23	23	47	47	47	0	47	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	43	43	43	43	18	18	18	18
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.00	0.37	0.05	0.31	0.07	0.06	0.11	0.11
s, saturation flow rate [veh/h]	834	1790	766	1865	1195	1860	1271	1625
c, Capacity [veh/h]	476	1123	405	1170	248	472	317	412
d1, Uniform Delay [s]	10.65	7.67	13.35	6.95	28.65	20.53	26.88	21.71
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	2.35	0.42	1.50	0.75	0.27	0.95	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.60	0.09	0.49	0.32	0.25	0.44	0.45
d, Delay for Lane Group [s/veh]	10.67	10.01	13.77	8.45	29.40	20.80	27.83	22.47
Lane Group LOS	B	B	B	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	5.55	0.38	4.26	1.27	1.49	2.14	2.52
50th-Percentile Queue Length [ft/ln]	0.68	138.74	9.43	106.38	31.75	37.26	53.62	63.01
95th-Percentile Queue Length [veh/ln]	0.05	9.41	0.68	7.64	2.29	2.68	3.86	4.54
95th-Percentile Queue Length [ft/ln]	1.22	235.33	16.97	190.95	57.16	67.07	96.51	113.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.67	10.01	10.01	13.77	8.45	8.45	29.40	20.80	20.80	27.83	22.47	22.47
Movement LOS	B	B	B	B	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.02			8.75			24.29			24.76		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	13.78											
Intersection LOS	B											
Intersection V/C	0.544											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.40	24.40	24.40	24.40
l_p,int, Pedestrian LOS Score for Intersectio	2.498	2.508	1.999	2.140
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	547	547	1243	1243
d_b, Bicycle Delay [s]	18.35	18.32	4.96	4.97
l_b,int, Bicycle LOS Score for Intersection	2.672	2.573	1.885	2.093
Bicycle LOS	B	B	A	B

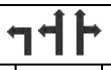
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	59.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	22	374	277	339	106	309	105	415	303	60	451	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	22	374	277	339	106	309	105	415	303	60	451	27
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	98	72	88	28	81	27	108	79	16	118	7
Total Analysis Volume [veh/h]	23	390	289	354	111	323	110	433	316	63	471	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			6			12			6		
v_di, Inbound Pedestrian Volume crossing m	12			6			12			6		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	50			19			4			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	40	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	40	0	34	34	34	0	38	0	29	29	29
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	32	32	32	43	43	43	24	24	24	24	23	23	23
g / C, Green / Cycle	0.23	0.23	0.23	0.31	0.31	0.31	0.17	0.17	0.17	0.17	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.21	0.20	0.13	0.13	0.21	0.06	0.14	0.15	0.15	0.04	0.13	0.14
s, saturation flow rate [veh/h]	1781	1870	1447	1781	1822	1549	1781	1870	1742	1544	1781	1870	1812
c, Capacity [veh/h]	403	424	328	551	564	479	306	321	299	265	287	301	292
d1, Uniform Delay [s]	42.47	52.97	51.24	38.39	38.34	41.94	51.23	56.11	56.22	56.13	51.15	57.00	57.14
k, delay calibration	0.11	0.26	0.23	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.17	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	17.16	14.98	2.33	2.25	7.39	0.71	5.66	6.45	8.02	0.38	9.11	10.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.92	0.88	0.42	0.42	0.67	0.36	0.83	0.84	0.86	0.22	0.84	0.85
d, Delay for Lane Group [s/veh]	42.53	70.13	66.22	40.73	40.59	49.33	51.94	61.77	62.67	64.15	51.53	66.11	67.62
Lane Group LOS	D	E	E	D	D	D	D	E	E	E	D	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.64	15.43	10.98	6.77	6.85	10.79	3.50	9.69	9.21	8.41	1.97	9.41	9.38
50th-Percentile Queue Length [ft/ln]	16.02	385.86	274.51	169.29	171.26	269.70	87.54	242.1	230.3	210.3	49.37	235.33	234.52
95th-Percentile Queue Length [veh/ln]	1.15	21.88	16.41	11.04	11.14	16.17	6.30	14.79	14.19	13.17	3.55	14.44	14.40
95th-Percentile Queue Length [ft/ln]	28.84	546.93	410.36	275.98	278.57	404.37	157.5	369.8	354.7	329.3	88.86	361.12	360.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.53	70.13	66.22	40.68	40.59	49.33	51.94	62.11	63.81	51.53	66.81	67.62
Movement LOS	D	E	E	D	D	D	D	E	E	D	E	E
d_A, Approach Delay [s/veh]	67.61			44.21			61.41			65.14		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	58.97											
Intersection LOS	E											
Intersection V/C	0.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.55	58.55	58.55	58.55
l_p,int, Pedestrian LOS Score for Intersectio	2.383	2.736	4.379	2.582
Crosswalk LOS	B	B	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	510	418	475	347
d_b, Bicycle Delay [s]	39.88	44.22	40.78	48.18
l_b,int, Bicycle LOS Score for Intersection	2.718	2.860	3.093	2.023
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	61.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	80	449	119	20	196	62	177	224	37	32	190	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	449	119	20	196	62	177	224	37	32	190	24
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	123	33	5	54	17	49	62	10	9	52	7
Total Analysis Volume [veh/h]	88	493	131	22	215	68	195	246	41	35	209	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			20			20			17		
v_di, Inbound Pedestrian Volume crossing m	17			20			20			18		
v_co, Outbound Pedestrian Volume crossing	33			29			34			29		
v_ci, Inbound Pedestrian Volume crossing mi	34			29			33			29		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			5			20			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	30	60	60	30	30	30	35	35	35	35	35	35
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	84	84	10	81	81	40	46	40	46	40	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	4.10	4.10	4.00	4.00	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.10	0.00	2.00	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	75	67	75	62	57	57	36	36
g / C, Green / Cycle	0.42	0.37	0.42	0.35	0.32	0.32	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.07	0.36	0.03	0.16	0.11	0.16	0.02	0.13
s, saturation flow rate [veh/h]	1191	1752	872	1738	1781	1790	1781	1803
c, Capacity [veh/h]	414	655	144	603	564	567	355	360
d1, Uniform Delay [s]	34.34	54.81	42.69	45.83	47.16	50.02	58.83	66.32
k, delay calibration	0.11	0.32	0.11	0.43	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	18.62	0.48	2.27	1.67	3.20	0.55	8.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.95	0.15	0.47	0.35	0.51	0.10	0.65
d, Delay for Lane Group [s/veh]	34.60	73.43	43.17	48.10	48.84	53.22	59.39	75.24
Lane Group LOS	C	E	D	D	D	D	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.48	30.93	0.61	10.44	7.11	11.19	1.39	10.99
50th-Percentile Queue Length [ft/ln]	62.12	773.31	15.26	261.04	177.68	279.73	34.72	274.72
95th-Percentile Queue Length [veh/ln]	4.47	40.05	1.10	15.74	11.48	16.67	2.50	16.43
95th-Percentile Queue Length [ft/ln]	111.82	1001.34	27.46	393.52	286.99	416.87	62.49	410.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.60	73.43	73.43	43.17	48.10	48.10	48.84	53.22	53.22	59.39	75.24	75.24
Movement LOS	C	E	E	D	D	D	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	68.63			47.74			51.45			73.19		
Approach LOS	E			D			D			E		
d_I, Intersection Delay [s/veh]	61.04											
Intersection LOS	E											
Intersection V/C	0.669											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	79.33	79.33	79.33	79.33
l_p,int, Pedestrian LOS Score for Intersectio	2.346	2.257	2.259	2.200
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	881	848	460	393
d_b, Bicycle Delay [s]	28.18	29.95	53.90	58.28
l_b,int, Bicycle LOS Score for Intersection	2.734	2.063	2.355	2.005
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	340	97	13	215	36	160	208	14	22	185	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	340	97	13	215	36	160	208	14	22	185	77
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	95	27	4	60	10	45	58	4	6	52	21
Total Analysis Volume [veh/h]	23	379	108	15	240	40	179	232	16	25	206	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			2			9			3		
v_di, Inbound Pedestrian Volume crossing m	9			3			9			2		
v_co, Outbound Pedestrian Volume crossing	7			1			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			12			20			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	69	69	69	69
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	23	23	19	15
g / C, Green / Cycle	0.33	0.33	0.27	0.22
(v / s)_i Volume / Saturation Flow Rate	0.29	0.16	0.23	0.18
s, saturation flow rate [veh/h]	1748	1795	1820	1778
c, Capacity [veh/h]	637	653	493	386
d1, Uniform Delay [s]	21.68	18.42	24.10	25.88
k, delay calibration	0.21	0.11	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.52	0.49	5.02	3.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.45	0.87	0.82
d, Delay for Lane Group [s/veh]	26.20	18.91	29.13	29.18
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	8.09	3.67	7.02	5.05
50th-Percentile Queue Length [ft/ln]	202.18	91.66	175.62	126.15
95th-Percentile Queue Length [veh/ln]	12.75	6.60	11.37	8.73
95th-Percentile Queue Length [ft/ln]	318.77	165.00	284.28	218.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.20	26.20	26.20	18.91	18.91	18.91	29.13	29.13	29.13	29.18	29.18	29.18
Movement LOS	C	C	C	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	26.20			18.91			29.13			29.18		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	26.23											
Intersection LOS	C											
Intersection V/C	0.748											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.46	26.18	24.46	24.46
l_p,int, Pedestrian LOS Score for Intersectio	2.113	1.994	2.029	2.031
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	867	867
d_b, Bicycle Delay [s]	11.18	11.16	11.21	11.12
l_b,int, Bicycle LOS Score for Intersection	2.401	2.046	2.264	2.083
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.917

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	16	13	33	115	3	248	29	1413	112	311	1129	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.40	0.00	1.50	1.20	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	13	33	115	3	248	29	1413	112	311	1129	10
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	9	30	1	65	8	370	29	81	296	3
Total Analysis Volume [veh/h]	17	14	35	121	3	260	30	1481	117	326	1183	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			14			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	30	0	0	30	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	27	0	0	27	0	15	58	0	25	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	21	6	51	51	22	67	67
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.05	0.47	0.47	0.20	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.20	0.02	6.07	0.17	0.02	0.41	0.07	0.18	0.22	0.22
s, saturation flow rate [veh/h]	156	1590	20	1574	1810	3578	1565	1788	3583	1873
c, Capacity [veh/h]	80	304	69	301	99	1671	731	351	2181	1140
d1, Uniform Delay [s]	38.28	36.77	54.72	42.96	49.00	18.29	11.69	39.85	4.66	4.66
k, delay calibration	0.22	0.11	0.50	0.14	0.11	0.50	0.50	0.32	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.07	0.17	415.12	8.97	1.70	7.35	0.47	24.35	0.46	0.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.12	1.81	0.86	0.30	0.89	0.16	0.93	0.36	0.36
d, Delay for Lane Group [s/veh]	44.35	36.94	469.85	51.93	50.70	25.64	12.16	64.19	5.12	5.54
Lane Group LOS	D	D	F	D	D	C	B	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.85	0.82	9.81	7.53	0.82	14.39	1.26	10.43	2.05	2.28
50th-Percentile Queue Length [ft/ln]	21.13	20.48	245.13	188.22	20.61	359.85	31.61	260.80	51.22	56.91
95th-Percentile Queue Length [veh/ln]	1.52	1.47	17.65	12.03	1.48	20.62	2.28	15.73	3.69	4.10
95th-Percentile Queue Length [ft/ln]	38.03	36.87	441.24	300.71	37.10	515.40	56.90	393.22	92.20	102.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.35	44.35	36.94	469.85	469.85	51.93	50.70	25.64	12.16	64.19	5.26	5.54
Movement LOS	D	D	D	F	F	D	D	C	B	E	A	A
d_A, Approach Delay [s/veh]	40.42			186.88			25.13			17.91		
Approach LOS	D			F			C			B		
d_I, Intersection Delay [s/veh]	39.63											
Intersection LOS	D											
Intersection V/C	6.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.967	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	382	382	927	1109
d_b, Bicycle Delay [s]	36.05	36.05	15.93	10.93
l_b,int, Bicycle LOS Score for Intersection	1.669	2.193	2.903	2.395
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.677

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	277	203	95	57	205	42	119	1301	72	34	947	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	203	95	57	205	42	119	1301	72	34	947	195
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	53	25	15	54	11	31	343	19	9	249	51
Total Analysis Volume [veh/h]	292	214	100	60	216	44	125	1371	76	36	998	205
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			1			9			2		
v_di, Inbound Pedestrian Volume crossing m	9			2			8			1		
v_co, Outbound Pedestrian Volume crossing	1			5			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			5			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			5			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	35	0	0	35	0	20	70	0	20	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	30	30	30	24	24	24	13	85	85	6	78	78
g / C, Green / Cycle	0.19	0.19	0.19	0.15	0.15	0.15	0.08	0.53	0.53	0.04	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.07	0.03	0.12	0.03	0.07	0.39	0.05	0.02	0.28	0.13
s, saturation flow rate [veh/h]	1781	1854	1517	1781	1870	1549	1781	3560	1540	1781	3560	1544
c, Capacity [veh/h]	331	345	282	268	281	233	147	1878	812	73	1732	751
d1, Uniform Delay [s]	61.67	61.64	56.64	59.84	65.38	59.47	70.29	16.82	11.60	74.11	18.90	16.01
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.39	3.23	0.75	0.42	4.38	0.39	12.44	2.54	0.23	5.04	1.40	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.75	0.35	0.22	0.77	0.19	0.85	0.73	0.09	0.49	0.58	0.27
d, Delay for Lane Group [s/veh]	65.06	64.88	57.39	60.26	69.76	59.86	82.74	19.36	11.82	79.15	20.30	16.91
Lane Group LOS	E	E	E	E	E	E	F	B	B	E	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.92	10.29	3.61	2.21	8.93	1.62	5.42	13.33	0.93	1.54	9.69	3.25
50th-Percentile Queue Length [ft/ln]	248.02	257.16	90.36	55.34	223.15	40.39	135.40	333.22	23.21	38.59	242.22	81.18
95th-Percentile Queue Length [veh/ln]	15.09	15.55	6.51	3.98	13.83	2.91	9.23	19.32	1.67	2.78	14.79	5.85
95th-Percentile Queue Length [ft/ln]	377.16	388.66	162.65	99.61	345.64	72.71	230.82	482.91	41.77	69.46	369.84	146.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.04	64.88	57.39	60.26	69.76	59.86	82.74	19.36	11.82	79.15	20.30	16.91
Movement LOS	E	E	E	E	E	E	F	B	B	E	C	B
d_A, Approach Delay [s/veh]	63.72			66.61			24.03			21.45		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	33.26											
Intersection LOS	C											
Intersection V/C	0.677											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	72.26	72.26	72.26
l_p,int, Pedestrian LOS Score for Intersectio	2.441	2.291	2.999	2.961
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	356	784	779
d_b, Bicycle Delay [s]	54.26	54.23	29.64	29.96
l_b,int, Bicycle LOS Score for Intersection	2.560	2.088	2.857	2.582
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	128	287	107	123	295	28	74	1272	112	80	989	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	287	107	123	295	28	74	1272	112	80	989	50
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	74	28	32	76	7	19	327	29	21	254	13
Total Analysis Volume [veh/h]	132	295	110	127	303	29	76	1309	115	82	1017	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	6			0			0			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			0			0			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	10			10			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	20	40	0	20	40	0	21	83	0	18	79	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	33	33	13	31	31	9	87	87	9	88	88
g / C, Green / Cycle	0.10	0.21	0.21	0.08	0.19	0.19	0.05	0.54	0.54	0.06	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.07	0.16	0.07	0.07	0.16	0.02	0.04	0.37	0.07	0.05	0.29	0.03
s, saturation flow rate [veh/h]	1781	1870	1553	1781	1870	1552	1781	3560	1553	1781	3560	1536
c, Capacity [veh/h]	179	388	322	149	356	296	96	1937	845	103	1950	841
d1, Uniform Delay [s]	70.03	59.74	54.06	72.47	62.64	53.46	72.05	4.07	3.47	73.05	12.46	9.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	3.09	0.62	12.80	5.70	0.14	13.49	1.91	0.34	13.14	1.00	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.76	0.34	0.85	0.85	0.10	0.79	0.68	0.14	0.80	0.52	0.06
d, Delay for Lane Group [s/veh]	75.87	62.83	54.68	85.27	68.34	53.60	85.54	5.99	3.80	86.19	13.46	10.11
Lane Group LOS	E	E	D	F	E	D	F	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.62	11.75	3.91	5.74	12.62	1.00	3.35	3.00	0.49	3.66	6.93	0.56
50th-Percentile Queue Length [ft/ln]	140.45	293.81	97.72	143.49	315.49	24.91	83.77	75.02	12.23	91.51	173.28	14.11
95th-Percentile Queue Length [veh/ln]	9.51	17.37	7.04	9.67	18.45	1.79	6.03	5.40	0.88	6.59	11.25	1.02
95th-Percentile Queue Length [ft/ln]	237.63	434.36	175.90	241.72	461.13	44.84	150.79	135.04	22.01	164.72	281.21	25.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.87	62.83	54.68	85.27	68.34	53.60	85.54	5.99	3.80	86.19	13.46	10.11
Movement LOS	E	E	D	F	E	D	F	A	A	F	B	B
d_A, Approach Delay [s/veh]	64.37			72.09			9.85			18.50		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	28.44											
Intersection LOS	C											
Intersection V/C	0.666											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.356	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	942	892
d_b, Bicycle Delay [s]	51.20	51.20	22.46	24.65
l_b,int, Bicycle LOS Score for Intersection	2.446	2.317	2.797	2.508
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	56	25	129	158	55	50	0	1422	66	0	1079	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	25	129	158	55	50	0	1422	66	0	1079	84
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9500	0.9560	0.9560	0.9500	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	7	34	41	14	13	0	372	17	0	282	22
Total Analysis Volume [veh/h]	59	26	135	165	58	52	0	1487	69	0	1129	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			14			13			0		
v_di, Inbound Pedestrian Volume crossing m	0			13			14			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			12			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	35	0	0	30	0	0	95	0	0	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	19	19	19	20	20	108	108	108	108
g / C, Green / Cycle	0.12	0.12	0.12	0.13	0.13	0.68	0.68	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.09	0.09	0.06	0.42	0.05	0.32	0.06
s, saturation flow rate [veh/h]	1781	1870	1528	1781	1696	3560	1523	3560	1589
c, Capacity [veh/h]	209	219	179	224	213	2402	1028	2402	1072
d1, Uniform Delay [s]	64.54	63.28	68.19	67.42	65.41	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	0.24	6.32	4.66	1.92	1.21	0.13	0.66	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.12	0.75	0.74	0.52	0.62	0.07	0.47	0.08
d, Delay for Lane Group [s/veh]	65.27	63.52	74.51	72.08	67.34	1.21	0.13	0.66	0.15
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.26	0.97	5.68	6.88	4.37	0.40	0.04	0.22	0.04
50th-Percentile Queue Length [ft/ln]	56.58	24.35	142.08	171.91	109.35	10.09	0.90	5.53	1.12
95th-Percentile Queue Length [veh/ln]	4.07	1.75	9.59	11.18	7.80	0.73	0.06	0.40	0.08
95th-Percentile Queue Length [ft/ln]	101.85	43.84	239.82	279.42	195.10	18.15	1.62	9.95	2.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.27	63.52	74.51	72.08	67.34	67.34	0.00	1.21	0.13	0.00	0.66	0.15
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	70.73			70.18			1.16			0.63		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	11.45											
Intersection LOS	B											
Intersection V/C	0.614											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.069	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	280	1092	1092
d_b, Bicycle Delay [s]	54.86	59.55	16.52	16.49
l_b,int, Bicycle LOS Score for Intersection	1.923	2.013	2.843	2.564
Bicycle LOS	A	B	C	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.794

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	51	348	96	193	228	28	227	1389	494	101	1228	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	348	96	193	228	28	227	1389	494	101	1228	44
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	91	25	51	60	7	60	365	130	27	323	12
Total Analysis Volume [veh/h]	54	366	101	203	240	29	239	1461	519	106	1291	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			18			0			19		
v_di, Inbound Pedestrian Volume crossing m	0			19			0			18		
v_co, Outbound Pedestrian Volume crossing	16			6			6			15		
v_ci, Inbound Pedestrian Volume crossing mi	15			6			6			16		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	13			14			5			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.2	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.20	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.20	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	71	71	13	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.48	0.48	0.08	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.15	0.06	0.13	0.02	0.13	0.41	0.33	0.06	0.36	0.03
s, saturation flow rate [veh/h]	1851	1724	3459	1870	1456	1781	3560	1555	1781	3560	1534
c, Capacity [veh/h]	300	279	658	356	277	200	1697	741	149	1592	686
d1, Uniform Delay [s]	61.53	61.80	52.27	56.44	50.11	63.81	23.34	20.07	62.79	15.04	10.72
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.57	4.74	0.10	0.84	0.06	92.97	5.99	5.45	2.32	4.60	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.91	0.31	0.67	0.10	1.20	0.86	0.70	0.71	0.81	0.07
d, Delay for Lane Group [s/veh]	65.11	66.54	52.36	57.28	50.17	156.77	29.33	25.53	65.11	19.64	10.91
Lane Group LOS	E	E	D	E	D	F	C	C	E	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.26	9.93	3.34	8.58	0.92	12.50	19.26	11.29	3.79	9.94	0.47
50th-Percentile Queue Length [ft/ln]	256.52	248.21	83.43	214.53	22.91	312.52	481.54	282.35	94.84	248.46	11.64
95th-Percentile Queue Length [veh/ln]	15.51	15.10	6.01	13.39	1.65	19.64	26.46	16.81	6.83	15.11	0.84
95th-Percentile Queue Length [ft/ln]	387.85	377.40	150.17	334.64	41.24	490.91	661.48	420.14	170.71	377.71	20.95

Movement, Approach, & Intersection Results

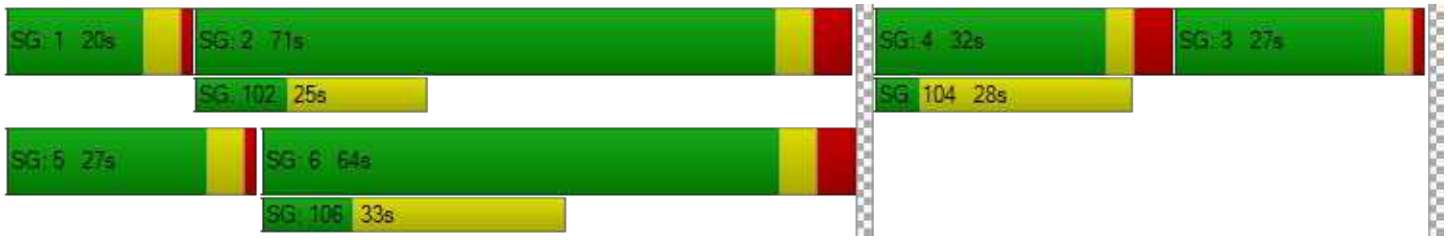
d_M, Delay for Movement [s/veh]	65.11	65.71	66.54	52.36	57.28	50.17	156.77	29.33	25.53	65.11	19.64	10.91
Movement LOS	E	E	E	D	E	D	F	C	C	E	B	B
d_A, Approach Delay [s/veh]	65.81			54.73			42.17			22.70		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	40.05											
Intersection LOS	D											
Intersection V/C	0.794											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.303	2.713	0.000	3.045
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.12	52.46	29.60	25.30
l_b,int, Bicycle LOS Score for Intersection	1.989	2.338	3.390	2.750
Bicycle LOS	A	B	C	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	11.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	57	13	47	36	30	112	70	1698	20	123	1330	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	13	47	36	30	112	70	1698	20	123	1330	35
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	3	12	9	8	29	18	445	5	32	349	9
Total Analysis Volume [veh/h]	60	14	49	38	31	118	73	1782	21	129	1396	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			4			5		
v_di, Inbound Pedestrian Volume crossing m	5			4			4			6		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			16			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	36	36	36	36	36	36	29	95	95	29	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	26	26	26	10	111	111	14	115	115
g / C, Green / Cycle	0.16	0.16	0.16	0.06	0.69	0.69	0.08	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.12	0.05	0.08	0.04	0.33	0.33	0.07	0.27	0.27
s, saturation flow rate [veh/h]	1025	1280	1535	1781	3560	1857	1781	3560	1841
c, Capacity [veh/h]	198	241	247	107	2463	1284	151	2549	1318
d1, Uniform Delay [s]	67.01	59.12	60.88	72.09	2.21	2.21	70.02	1.10	1.10
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.16	0.65	1.44	7.37	0.68	1.30	12.83	0.41	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.29	0.48	0.68	0.48	0.48	0.86	0.37	0.37
d, Delay for Lane Group [s/veh]	70.17	59.77	62.32	79.46	2.88	3.51	82.85	1.51	1.90
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.11	2.60	4.57	3.10	1.95	2.26	5.59	0.88	1.06
50th-Percentile Queue Length [ft/ln]	127.67	64.88	114.35	77.42	48.69	56.39	139.74	22.11	26.48
95th-Percentile Queue Length [veh/ln]	8.81	4.67	8.08	5.57	3.51	4.06	9.47	1.59	1.91
95th-Percentile Queue Length [ft/ln]	220.32	116.79	202.03	139.36	87.63	101.50	236.67	39.80	47.66

Movement, Approach, & Intersection Results

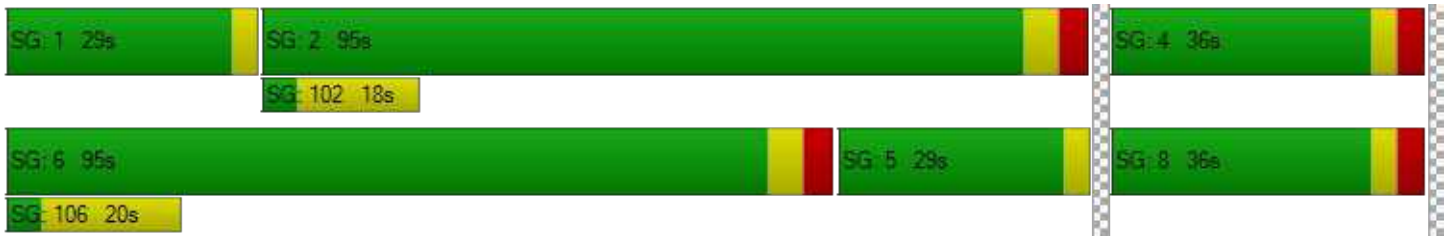
d_M, Delay for Movement [s/veh]	70.17	70.17	70.17	59.77	59.77	62.32	79.46	3.09	3.51	82.85	1.64	1.90
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	70.17			61.38			6.07			8.35		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	11.88											
Intersection LOS	B											
Intersection V/C	0.561											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.851	2.026	0.000	0.000
Crosswalk LOS	A	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	1099	1099
d_b, Bicycle Delay [s]	53.05	53.24	16.29	16.25
l_b,int, Bicycle LOS Score for Intersection	1.763	1.868	2.591	2.419
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	249	0	183	0	1	3	270	1664	1	2	1234	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	249	0	183	0	1	3	270	1664	1	2	1234	120
Peak Hour Factor	0.9520	0.9900	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	0	48	0	0	1	71	437	0	1	324	32
Total Analysis Volume [veh/h]	262	0	192	0	1	3	284	1748	1	2	1296	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			7			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	5	0	0	10	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	41	41	0	0	41	0	55	85	0	34	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	36	36	36	36	28	113	113	0	86	86
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.17	0.71	0.71	0.00	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.19	0.12	0.00	0.00	0.16	0.32	0.32	0.00	0.27	0.27
s, saturation flow rate [veh/h]	1412	1592	1191	1651	1781	3560	1869	1781	3560	1774
c, Capacity [veh/h]	344	361	172	375	307	2519	1322	4	1913	953
d1, Uniform Delay [s]	61.07	54.36	0.00	47.92	60.57	1.47	1.47	79.64	13.15	13.18
k, delay calibration	0.17	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.51	1.21	0.00	0.01	11.53	0.60	1.13	61.56	0.92	1.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.53	0.00	0.01	0.92	0.46	0.46	0.46	0.49	0.50
d, Delay for Lane Group [s/veh]	66.59	55.57	0.00	47.93	72.11	2.07	2.61	141.20	14.07	15.04
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.86	6.99	0.00	0.13	11.94	1.42	1.69	0.16	6.47	6.76
50th-Percentile Queue Length [ft/ln]	271.61	174.69	0.00	3.18	298.52	35.51	42.22	3.91	161.72	169.08
95th-Percentile Queue Length [veh/ln]	16.27	11.32	0.00	0.23	17.61	2.56	3.04	0.28	10.64	11.03
95th-Percentile Queue Length [ft/ln]	406.76	283.07	0.00	5.73	440.19	63.91	75.99	7.04	266.00	275.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.59	55.57	55.57	0.00	47.93	47.93	72.11	2.25	2.61	141.20	14.33	15.04
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	61.93			47.93			12.01			14.57		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	18.77											
Intersection LOS	B											
Intersection V/C	0.654											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.971	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	437	974	711
d_b, Bicycle Delay [s]	48.88	48.83	21.14	33.29
l_b,int, Bicycle LOS Score for Intersection	2.309	1.566	2.678	2.343
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	7.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.453

Intersection Setup

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	26	0	35	1	1	1	213	1985	2	25	1355	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	0	35	1	1	1	213	1985	2	25	1355	39
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	9	0	0	0	56	524	1	7	358	10
Total Analysis Volume [veh/h]	27	0	37	1	1	1	225	2096	2	26	1431	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			17			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	40	0	0	40	0	35	105	0	15	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	22	132	132	3	112	112
g / C, Green / Cycle	0.08	0.08	0.08	0.14	0.82	0.82	0.02	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.00	0.13	0.39	0.39	0.01	0.27	0.27
s, saturation flow rate [veh/h]	1515	1589	1586	1781	3560	1869	1781	3560	1840
c, Capacity [veh/h]	173	134	164	247	2925	1535	34	2499	1291
d1, Uniform Delay [s]	68.10	68.66	67.17	64.26	0.00	0.00	77.62	1.67	1.67
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	1.10	0.04	12.40	0.55	1.04	29.20	0.46	0.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.28	0.02	0.91	0.47	0.47	0.77	0.39	0.39
d, Delay for Lane Group [s/veh]	68.52	69.76	67.22	76.66	0.55	1.04	106.82	2.12	2.55
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.06	1.48	0.12	9.53	0.22	0.44	1.34	1.27	1.47
50th-Percentile Queue Length [ft/ln]	26.58	37.05	2.94	238.32	5.54	11.06	33.43	31.83	36.80
95th-Percentile Queue Length [veh/ln]	1.91	2.67	0.21	14.60	0.40	0.80	2.41	2.29	2.65
95th-Percentile Queue Length [ft/ln]	47.84	66.70	5.30	364.90	9.97	19.91	60.18	57.30	66.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.52	68.52	69.76	67.22	67.22	67.22	76.66	0.71	1.04	106.82	2.26	2.55
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.23			67.22			8.07			4.09		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.59											
Intersection LOS	A											
Intersection V/C	0.453											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.059	1.751	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	412	412	1225	975
d_b, Bicycle Delay [s]	50.41	50.41	12.12	21.03
l_b,int, Bicycle LOS Score for Intersection	1.665	1.565	2.837	2.384
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	326	325	252	360	322	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.90	0.50	2.30	0.00	0.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	326	325	252	360	322	90
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	93	72	103	92	26
Total Analysis Volume [veh/h]	374	373	289	413	369	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	15		0		16	
v_ci, Inbound Pedestrian Volume crossing mi	16		0		15	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		15		8	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	13	13	9	26	12	12
g / C, Green / Cycle	0.28	0.28	0.20	0.57	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.20	0.25	0.16	0.22	0.20	0.07
s, saturation flow rate [veh/h]	1861	1508	1802	1865	1810	1556
c, Capacity [veh/h]	528	428	358	1065	454	391
d1, Uniform Delay [s]	14.80	15.41	17.64	5.45	16.24	13.81
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.66	2.21	1.67	0.09	1.36	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.87	0.81	0.39	0.81	0.26
d, Delay for Lane Group [s/veh]	15.46	17.62	19.31	5.53	17.60	13.95
Lane Group LOS	B	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.03	3.31	2.77	1.52	3.27	0.75
50th-Percentile Queue Length [ft/ln]	75.73	82.70	69.37	38.05	81.72	18.75
95th-Percentile Queue Length [veh/ln]	5.45	5.95	4.99	2.74	5.88	1.35
95th-Percentile Queue Length [ft/ln]	136.32	148.87	124.87	68.50	147.09	33.74

Movement, Approach, & Intersection Results

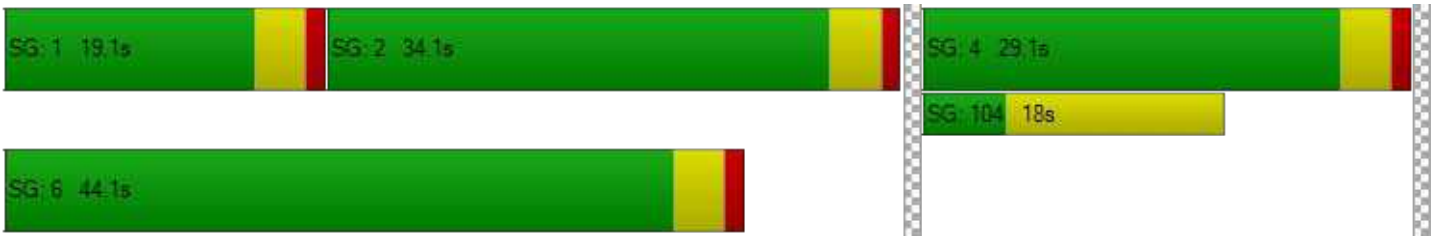
d_M, Delay for Movement [s/veh]	15.46	17.62	19.31	5.53	17.60	13.95
Movement LOS	B	B	B	A	B	B
d_A, Approach Delay [s/veh]	16.54		11.20		16.80	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	14.65					
Intersection LOS	B					
Intersection V/C	0.670					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	14.87	4.38
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.225	2.225
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1305	1740	1088
d_b, Bicycle Delay [s]	2.79	0.39	4.80
l_b,int, Bicycle LOS Score for Intersection	2.792	2.718	1.560
Bicycle LOS	C	B	A

Sequence

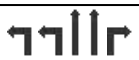
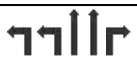
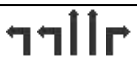
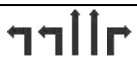
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Sand Hill Rd/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	339	603	144	306	981	158	291	809	243	146	699	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	603	144	306	981	158	291	809	243	146	699	166
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	159	38	80	258	42	76	213	64	38	184	44
Total Analysis Volume [veh/h]	356	634	151	322	1032	166	306	851	256	154	735	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			6			6			0		
v_di, Inbound Pedestrian Volume crossing m	0			6			6			1		
v_co, Outbound Pedestrian Volume crossing	2			1			3			2		
v_ci, Inbound Pedestrian Volume crossing mi	3			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			9			33			20		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	8	8	4	8	8	8	8	8	8	8	8
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	20	44	44	20	44	44	20	40	40	16	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.6	3.6	2.0	3.6	3.6	2.1	3.6	3.6	2.1	3.6	3.6
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.60	5.60	4.00	5.60	5.60	4.10	5.60	5.60	4.10	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.60	3.60	2.00	3.60	3.60	2.10	3.60	3.60	2.10	3.60	3.60
g_i, Effective Green Time [s]	14	47	47	13	46	46	13	32	32	9	28	28
g / C, Green / Cycle	0.12	0.39	0.39	0.11	0.38	0.38	0.11	0.26	0.26	0.07	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.10	0.09	0.29	0.11	0.09	0.24	0.17	0.04	0.21	0.11
s, saturation flow rate [veh/h]	3459	3560	1539	3459	3560	1558	3459	3560	1506	3459	3560	1538
c, Capacity [veh/h]	416	1386	599	386	1355	593	369	940	398	257	825	356
d1, Uniform Delay [s]	51.83	27.26	24.76	52.29	32.46	25.74	52.60	42.75	38.78	53.89	44.69	39.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.12	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	1.09	1.01	4.75	4.09	1.18	4.80	3.63	1.97	2.24	3.59	1.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.46	0.25	0.83	0.76	0.28	0.83	0.90	0.64	0.60	0.89	0.49
d, Delay for Lane Group [s/veh]	56.94	28.35	25.77	57.04	36.55	26.92	57.40	46.38	40.75	56.12	48.28	40.90
Lane Group LOS	E	C	C	E	D	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.50	6.86	3.04	4.97	13.50	3.44	4.73	12.46	6.76	2.32	10.84	4.53
50th-Percentile Queue Length [ft/ln]	137.58	171.41	76.09	124.14	337.58	86.05	118.19	311.41	168.93	57.99	271.05	113.33
95th-Percentile Queue Length [veh/ln]	9.35	11.15	5.48	8.62	19.53	6.20	8.29	18.24	11.02	4.17	16.24	8.02
95th-Percentile Queue Length [ft/ln]	233.76	278.77	136.95	215.51	488.24	154.89	207.33	456.11	275.51	104.37	406.05	200.62

Movement, Approach, & Intersection Results

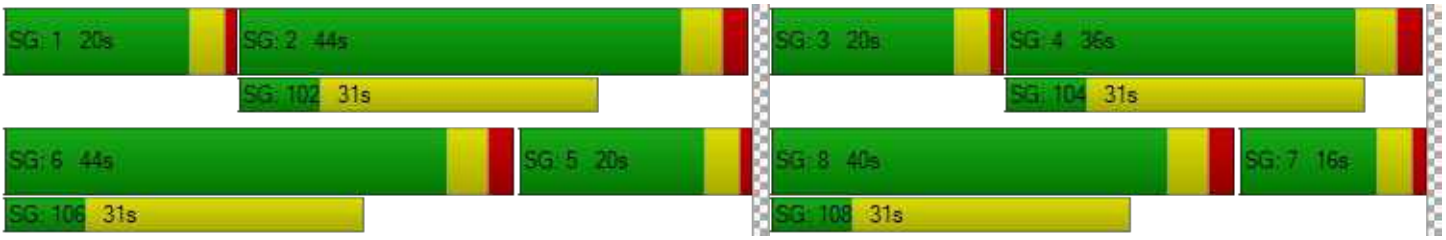
d_M, Delay for Movement [s/veh]	56.94	28.35	25.77	57.04	36.55	26.92	57.40	46.38	40.75	56.12	48.28	40.90
Movement LOS	E	C	C	E	D	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	36.93			39.84			47.75			48.20		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.10											
Intersection LOS	D											
Intersection V/C	0.750											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.55	49.55	49.55	49.55
l_p,int, Pedestrian LOS Score for Intersectio	3.039	3.104	3.034	3.004
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	573	506
d_b, Bicycle Delay [s]	28.18	27.91	31.08	33.83
l_b,int, Bicycle LOS Score for Intersection	2.501	2.814	2.725	2.437
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	32.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	137	17	170	0	6	23	6	0	2	190	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	137	17	170	0	6	23	6	0	2	190	335
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	5	46	0	2	6	2	0	1	51	90
Total Analysis Volume [veh/h]	0	147	18	182	0	6	25	6	0	2	204	359
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	551	441	616
Degree of Utilization, x	0.63	0.08	0.92

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.35	0.27	11.74
95th-Percentile Queue Length [ft]	108.73	6.83	293.45
Approach Delay [s/veh]	19.95	11.90	42.89
Approach LOS	C	B	E
Intersection Delay [s/veh]	32.44		
Intersection LOS	D		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	115	297	8	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	297	8	0	0	0	0	0
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	80	2	0	0	0	0	0
Total Analysis Volume [veh/h]	123	319	9	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	561	439
Degree of Utilization, x	0.80	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.84	0.00
95th-Percentile Queue Length [ft]	195.93	0.00
Approach Delay [s/veh]	30.64	0.00
Approach LOS	D	A
Intersection Delay [s/veh]	32.44	
Intersection LOS	D	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	54.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.868

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	60	406	325	43	414	67	220	19	45	53	30	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	406	325	43	414	67	220	19	45	53	30	58
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	118	94	13	120	19	64	6	13	15	9	17
Total Analysis Volume [veh/h]	70	472	378	50	481	78	256	22	52	62	35	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			5			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	0			6			0			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	11			7			1			8		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	30	36	30	24	24	24
g / C, Green / Cycle	0.53	0.43	0.53	0.43	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.50	0.06	0.31	0.31	0.05	0.06
s, saturation flow rate [veh/h]	977	1709	787	1813	1081	1326	1642
c, Capacity [veh/h]	456	742	290	775	462	116	561
d1, Uniform Delay [s]	10.43	19.53	14.95	16.38	24.07	15.93	15.96
k, delay calibration	0.23	0.50	0.11	0.31	0.23	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	80.81	0.28	3.62	4.39	3.75	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	1.15	0.17	0.72	0.71	0.53	0.18
d, Delay for Lane Group [s/veh]	10.76	100.35	15.23	19.99	28.46	19.67	16.11
Lane Group LOS	B	F	B	B	C	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.48	26.84	0.33	7.16	5.49	0.78	1.11
50th-Percentile Queue Length [ft/ln]	11.91	671.07	8.23	178.97	137.34	19.48	27.71
95th-Percentile Queue Length [veh/ln]	0.86	38.81	0.59	11.55	9.34	1.40	2.00
95th-Percentile Queue Length [ft/ln]	21.44	970.26	14.82	288.67	233.43	35.06	49.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.76	100.35	100.35	15.23	19.99	19.99	28.46	28.46	28.46	19.67	16.11	16.11
Movement LOS	B	F	F	B	B	B	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	93.53			19.60			28.46			17.46		
Approach LOS	F			B			C			B		
d_I, Intersection Delay [s/veh]	54.49											
Intersection LOS	D											
Intersection V/C	0.868											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	-4.0	0.0	-5.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	38.68	0.00	39.75
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.485	0.000	2.081
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	868	868	868	868
d_b, Bicycle Delay [s]	11.14	11.11	11.08	11.12
l_b,int, Bicycle LOS Score for Intersection	3.078	2.564	2.104	1.830
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	418	722	425	632	637	139
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	418	722	425	632	637	139
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	184	108	161	163	35
Total Analysis Volume [veh/h]	427	737	434	645	650	142
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	29		41		20	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	10	7	10	8	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	38	48	44	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	34	34	34	55	93	28	28
g / C, Green / Cycle	0.26	0.26	0.26	0.42	0.72	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.21	0.24	0.41	0.18	0.09
s, saturation flow rate [veh/h]	1781	1858	1870	1781	1565	3560	1537
c, Capacity [veh/h]	467	487	490	751	1119	754	325
d1, Uniform Delay [s]	44.89	44.87	44.87	28.76	8.87	49.41	44.35
k, delay calibration	0.18	0.18	0.18	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.60	5.32	5.27	3.23	2.16	3.07	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.81	0.81	0.58	0.58	0.86	0.44
d, Delay for Lane Group [s/veh]	50.48	50.18	50.14	32.00	11.04	52.49	45.28
Lane Group LOS	D	D	D	C	B	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	12.08	12.55	12.62	11.00	8.70	10.49	4.07
50th-Percentile Queue Length [ft/ln]	302.10	313.65	315.42	274.99	217.60	262.35	101.82
95th-Percentile Queue Length [veh/ln]	17.79	18.35	18.44	16.44	13.54	15.81	7.33
95th-Percentile Queue Length [ft/ln]	444.63	458.87	461.06	410.97	338.56	395.17	183.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.45	50.16	32.00	11.04	52.49	45.28
Movement LOS	D	D	C	B	D	D
d_A, Approach Delay [s/veh]	50.27		19.47		51.20	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	39.56					
Intersection LOS	D					
Intersection V/C	0.753					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	522	602
d_b, Bicycle Delay [s]	29.27	36.27	32.10
l_b,int, Bicycle LOS Score for Intersection	2.520	1.560	2.213
Bicycle LOS	B	A	B

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road/101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	2152	0	0	1540	605	591
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2152	0	0	1540	605	591
Peak Hour Factor	0.9550	1.0000	1.0000	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	563	0	0	403	158	155
Total Analysis Volume [veh/h]	2253	0	0	1613	634	619
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	100	0	0	100	100	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	70	0	0	70	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	Yes	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	68	68	28	28
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.63	0.45	0.18	0.22
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2401	2401	971	790
d1, Uniform Delay [s]	14.48	9.72	31.73	33.22
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.71	1.52	3.41	7.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.67	0.65	0.78
d, Delay for Lane Group [s/veh]	23.19	11.24	35.14	40.86
Lane Group LOS	C	B	D	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	21.81	9.60	7.11	7.63
50th-Percentile Queue Length [ft/ln]	545.28	239.88	177.68	190.85
95th-Percentile Queue Length [veh/ln]	29.47	14.68	11.48	12.17
95th-Percentile Queue Length [ft/ln]	736.76	366.88	286.98	304.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.19	0.00	0.00	11.24	35.14	40.86
Movement LOS	C			B	D	D
d_A, Approach Delay [s/veh]	23.19		11.24		37.97	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	23.04					
Intersection LOS	C					
Intersection V/C	0.917					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	41.46	39.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.231	2.441
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	515
d_b, Bicycle Delay [s]	6.02	6.04	27.58
l_b,int, Bicycle LOS Score for Intersection	3.418	2.890	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	30.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	371	192	21	20	197	332	11	194	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	371	192	21	20	197	332	11	194	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	101	52	6	5	53	90	3	53	2
Total Analysis Volume [veh/h]	10	193	16	403	208	23	22	214	360	12	211	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	391	416	430	463	446	493	424
Degree of Utilization, x	0.03	0.50	0.94	0.50	0.53	0.73	0.54

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	2.74	10.70	2.73	3.02	5.99	3.16
95th-Percentile Queue Length [ft]	1.97	68.42	267.38	68.29	75.62	149.77	78.95
Approach Delay [s/veh]	19.41		43.27		24.27		21.18
Approach LOS	C		E		C		C
Intersection Delay [s/veh]	30.39						
Intersection LOS	D						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	38.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1142	146	0	974	782	0	0	0	782	0	337
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1142	146	0	974	782	0	0	0	782	0	337
Peak Hour Factor	1.0000	0.9520	0.9520	1.0000	0.9520	0.9520	1.0000	1.0000	1.0000	0.9520	1.0000	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	300	38	0	256	205	0	0	0	205	0	88
Total Analysis Volume [veh/h]	0	1200	153	0	1023	821	0	0	0	821	0	354
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	112	0	0	112	0	0	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	108	108	108		29	29
g / C, Green / Cycle	0.74	0.74	0.74		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.24	0.20	0.53		0.24	0.13
s, saturation flow rate [veh/h]	5094	5094	1550		3459	2813
c, Capacity [veh/h]	3793	3793	1154		692	563
d1, Uniform Delay [s]	6.18	5.91	9.77		57.92	52.99
k, delay calibration	0.50	0.50	0.50		0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.22	0.18	3.74		87.98	1.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.27	0.71		1.19	0.63
d, Delay for Lane Group [s/veh]	6.40	6.09	13.51		145.89	54.15
Lane Group LOS	A	A	B		F	D
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	3.95	3.22	13.75		21.15	6.03
50th-Percentile Queue Length [ft/ln]	98.63	80.39	343.77		528.66	150.66
95th-Percentile Queue Length [veh/ln]	7.10	5.79	19.83		31.30	10.05
95th-Percentile Queue Length [ft/ln]	177.53	144.71	495.81		782.41	251.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.40	0.00	0.00	6.09	13.51	0.00	0.00	0.00	145.89	0.00	54.15
Movement LOS		A			A	B				F		D
d_A, Approach Delay [s/veh]	5.70			9.39			0.00			118.25		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	38.66											
Intersection LOS	D											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.74	0.00	63.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.977	0.000	1.447	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1491	1491	0	400
d_b, Bicycle Delay [s]	4.70	4.72	72.46	46.36
l_b,int, Bicycle LOS Score for Intersection	2.220	2.574	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	89.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1299	684	0	1296	852	0	0	0	359	0	849
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1299	684	0	1296	852	0	0	0	359	0	849
Peak Hour Factor	1.0000	0.9330	0.9330	1.0000	0.9330	0.9330	1.0000	1.0000	1.0000	0.9330	1.0000	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	348	183	0	347	228	0	0	0	96	0	227
Total Analysis Volume [veh/h]	0	1392	733	0	1389	913	0	0	0	385	0	910
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	2.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	95	0	0	95	0	0	0	0	25	0	25
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	91	91	116		21	46
g / C, Green / Cycle	0.63	0.63	0.80		0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.46	0.47	0.46		0.11	0.55
s, saturation flow rate [veh/h]	3003	1556	3003		3459	1658
c, Capacity [veh/h]	1886	977	2401		502	525
d1, Uniform Delay [s]	18.67	18.59	5.41		59.58	49.51
k, delay calibration	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	2.63	5.28	1.02		2.50	337.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.75	0.58		0.77	1.73
d, Delay for Lane Group [s/veh]	21.30	23.87	6.43		62.08	387.25
Lane Group LOS	C	C	A		E	F
Critical Lane Group	No	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	10.92	17.89	4.68		7.01	34.09
50th-Percentile Queue Length [ft/ln]	273.06	447.20	117.12		175.16	852.30
95th-Percentile Queue Length [veh/ln]	16.34	24.82	8.23		11.35	55.79
95th-Percentile Queue Length [ft/ln]	408.57	620.60	205.86		283.69	1394.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.30	23.87	0.00	6.43	0.00	0.00	0.00	0.00	62.08	0.00	387.25
Movement LOS		C	C		A					E		F
d_A, Approach Delay [s/veh]	22.19			3.99			0.00			290.58		
Approach LOS	C			A			A			F		
d_I, Intersection Delay [s/veh]	89.20											
Intersection LOS	F											
Intersection V/C	0.681											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	63.75	63.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.132	1.447	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1601	0	290
d_b, Bicycle Delay [s]	10.05	2.90	72.47	52.99
l_b,int, Bicycle LOS Score for Intersection	2.728	2.324	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.430

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	15	272	82	95	157	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	272	82	95	157	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	74	22	26	43	2
Total Analysis Volume [veh/h]	16	296	89	103	171	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	628	688	777	677
Degree of Utilization, x	0.03	0.43	0.25	0.26

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	2.17	0.97	1.06
95th-Percentile Queue Length [ft]	1.96	54.16	24.32	26.51
Approach Delay [s/veh]	11.65		9.15	10.22
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.57			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.043

Intersection Setup

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	528	8	5	222	16	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	528	8	5	222	16	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	2	1	56	4	1
Total Analysis Volume [veh/h]	528	8	5	222	16	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.04	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.49	0.00	15.22	12.06
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.16	0.16
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.21	0.21	3.98	3.98
d_A, Approach Delay [s/veh]	0.00		0.19		14.59	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.43					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.035

Intersection Setup

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	565	17	0	223	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	565	17	0	223	0	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	4	0	56	0	5
Total Analysis Volume [veh/h]	565	17	0	223	0	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	8.63	0.00	15.37	12.19
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	2.69	2.69
d_A, Approach Delay [s/veh]	0.00		0.00		12.19	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.27					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	All-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	73	192	25	8	152	9	56	80	9	3	274	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	192	25	8	152	9	56	80	9	3	274	14
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	52	7	2	41	2	15	22	2	1	74	4
Total Analysis Volume [veh/h]	79	209	27	9	165	10	61	87	10	3	298	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	631	607	594	632
Degree of Utilization, x	0.50	0.30	0.27	0.50

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.79	1.27	1.07	2.80
95th-Percentile Queue Length [ft]	69.74	31.86	26.70	69.99
Approach Delay [s/veh]	14.24	11.49	11.26	14.25
Approach LOS	B	B	B	B
Intersection Delay [s/veh]	13.24			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	232	191	95	110	139	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	191	95	110	139	46
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	53	26	31	39	13
Total Analysis Volume [veh/h]	258	212	106	122	154	51
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	782	688	643
Degree of Utilization, x	0.60	0.33	0.32

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.09	1.45	1.37
95th-Percentile Queue Length [ft]	102.26	36.24	34.22
Approach Delay [s/veh]	14.29	10.80	11.19
Approach LOS	B	B	B
Intersection Delay [s/veh]	12.71		
Intersection LOS	B		

Intersection Level Of Service Report
Intersection 292: Ravesnwood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	25.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	9	514	7	5	203	7	11	5	16	5	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	514	7	5	203	7	11	5	16	5	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	138	2	1	55	2	3	1	4	1	0	5
Total Analysis Volume [veh/h]	10	553	8	5	218	8	12	5	17	5	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.68	0.01	0.03	0.27	0.01	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	21.03	19.15	18.10	25.31	11.41	10.37	7.27	0.00	0.00	7.27	0.00	0.00
Movement LOS	C	C	C	D	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.92	5.92	5.92	1.26	1.26	1.26	0.02	0.02	0.02	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	148.02	148.02	148.02	31.60	31.60	31.60	0.58	0.58	0.58	0.25	0.25	0.25
d_A, Approach Delay [s/veh]	19.17			11.68			2.57			1.51		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	16.01											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	55	2	38	5	0	2	12	274	4	3	261	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	2	38	5	0	2	12	274	4	3	261	24
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	1	12	2	0	1	4	84	1	1	80	7
Total Analysis Volume [veh/h]	67	2	46	6	0	2	15	334	5	4	318	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	661	621	766	773
Degree of Utilization, x	0.17	0.01	0.46	0.45

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.63	0.04	2.46	2.39
95th-Percentile Queue Length [ft]	15.66	0.98	61.48	59.70
Approach Delay [s/veh]	9.59	8.88	11.67	11.47
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	11.27			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	421	0	0	331
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	421	0	0	331
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	105	0	0	83
Total Analysis Volume [veh/h]	0	0	421	0	0	331
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.53	10.69	0.00	0.00	8.16	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.61		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	387	0	0	320
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	387	0	0	320
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	97	0	0	80
Total Analysis Volume [veh/h]	0	0	387	0	0	320
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	662	847	835
Degree of Utilization, x	0.00	0.46	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	2.42	1.81
95th-Percentile Queue Length [ft]	0.00	60.52	45.30
Approach Delay [s/veh]	0.00	10.77	9.96
Approach LOS	A	B	A
Intersection Delay [s/veh]	10.40		
Intersection LOS	B		

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_PM_2023.11.17.vistro
Report File: P:\...\CPPM.pdf

Scenario 20 Cumulative (2040) Plus Project PM

11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SWB Thru	0.869	24.5	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	NEB Left	0.729	29.2	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.856	52.6	D
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.729	51.5	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.671	36.7	D
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NEB Left	0.900	471.1	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	SWB Right	0.204	10,000.0	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NEB Thru	0.975	126.5	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	EB Thru	1.008	174.3	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	WB Right	1.870	292.4	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.054	60.2	E
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Right	1.946	543.1	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.370	300.2	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	NEB Left	0.758	13.0	B
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.570	15.7	B
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.775	19.3	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.738	18.1	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	SEB Right	0.841	66.7	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SEB Thru	0.735	63.9	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.777	30.3	C
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	6.912	51.1	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	NWB Left	0.711	35.0	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	SEB Left	0.678	28.6	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.623	11.3	B
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NWB Left	0.825	43.7	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.570	11.4	B
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.684	18.7	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.481	7.4	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.690	15.5	B
39	Sand Hill Rd/Santa Cruz Ave	Signalized	HCM 7th Edition	NWB Left	0.759	43.5	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	EB Right	1.012	47.9	E
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NEB Thru	0.873	56.2	E
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	NEB Thru	0.763	40.0	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.924	23.4	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	SWB Left	1.009	35.2	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.862	36.8	D
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.715	87.7	F

224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.438	10.9	B
250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.266	24.8	C
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Right	0.042	12.9	B
254	Laurel Street and Glenwood Ave	All-way stop	HCM 7th Edition	SEB Thru	0.540	14.5	B
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	NEB Thru	0.647	14.4	B
292	Ravesnwood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SWB Left	0.210	64.0	F
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.528	12.2	B
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SWB Left	0.038	16.0	C
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.505	11.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	968	1136	279	1614	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	968	1136	279	1614	606
Peak Hour Factor	1.0000	0.9720	0.9720	1.0000	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	249	292	70	415	156
Total Analysis Volume [veh/h]	0	996	1169	279	1660	623
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	100	100	0	100	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	40	40	0	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	5	0
Pedestrian Clearance [s]	0	12	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	45	43	50	50
g / C, Green / Cycle	0.45	0.43	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.25	0.33	0.48	0.39
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	1809	1536	1739	799
d1, Uniform Delay [s]	20.00	24.10	23.79	20.35
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	3.62	1.61	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.76	0.95	0.78
d, Delay for Lane Group [s/veh]	21.21	27.72	25.41	20.98
Lane Group LOS	C	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.33	11.81	17.85	11.35
50th-Percentile Queue Length [ft/ln]	208.30	295.35	446.32	283.78
95th-Percentile Queue Length [veh/ln]	13.07	17.45	24.78	16.88
95th-Percentile Queue Length [ft/ln]	326.65	436.27	619.56	421.91

Movement, Approach, & Intersection Results

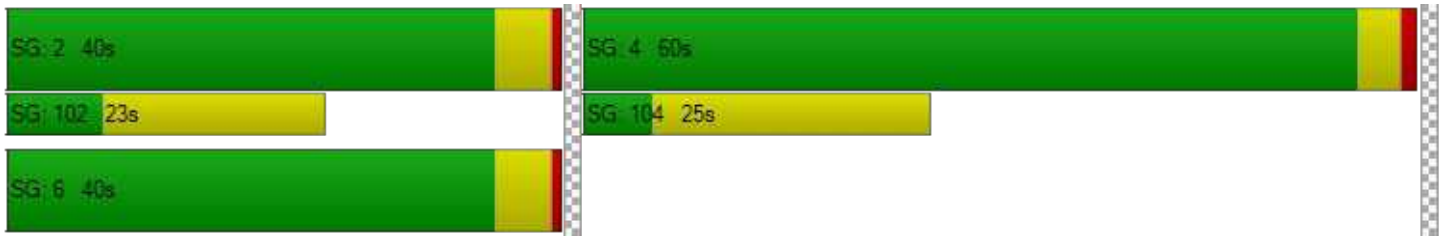
d_M, Delay for Movement [s/veh]	0.00	21.21	27.72	0.00	25.41	20.98
Movement LOS		C	C		C	C
d_A, Approach Delay [s/veh]	21.21		27.72		24.20	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	24.46					
Intersection LOS	C					
Intersection V/C	0.869					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.43	0.00	39.63
l_p,int, Pedestrian LOS Score for Intersectio	2.931	0.000	2.687
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1117
d_b, Bicycle Delay [s]	20.95	20.90	9.74
l_b,int, Bicycle LOS Score for Intersection	2.381	2.524	1.560
Bicycle LOS	B	B	A

Sequence

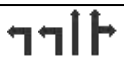
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	57	1148	2	157	1178	276	15	12	291	300	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	1148	2	157	1178	276	15	12	291	300	6	2
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	298	1	41	306	72	4	3	76	78	2	1
Total Analysis Volume [veh/h]	59	1192	2	163	1223	287	16	12	302	312	6	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	57	0	20	62	0	0	36	0	0	32	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	145	145	145	145	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	88	88	11	91	91	20	20	18	18
g / C, Green / Cycle	0.06	0.61	0.61	0.07	0.63	0.63	0.14	0.14	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.22	0.05	0.41	0.43	0.02	0.11	0.09	0.09
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1734	1818	2813	1781	1781
c, Capacity [veh/h]	100	2171	1139	256	1174	1089	250	387	220	220
d1, Uniform Delay [s]	66.72	14.14	14.14	65.12	17.00	17.53	54.69	60.33	61.07	61.07
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.13	0.47	0.89	0.98	2.84	3.46	0.15	2.60	3.39	3.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.36	0.36	0.64	0.65	0.68	0.11	0.78	0.73	0.73
d, Delay for Lane Group [s/veh]	70.85	14.60	15.03	66.10	19.84	21.00	54.84	62.92	64.46	64.46
Lane Group LOS	E	B	B	E	B	C	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.24	6.48	6.93	2.96	16.38	16.48	0.92	5.56	5.94	5.94
50th-Percentile Queue Length [ft/ln]	56.07	161.88	173.24	73.89	409.60	412.08	23.03	138.99	148.44	148.48
95th-Percentile Queue Length [veh/ln]	4.04	10.65	11.25	5.32	23.02	23.14	1.66	9.43	9.93	9.94
95th-Percentile Queue Length [ft/ln]	100.93	266.21	281.17	133.00	575.55	578.54	41.46	235.67	248.35	248.39

Movement, Approach, & Intersection Results

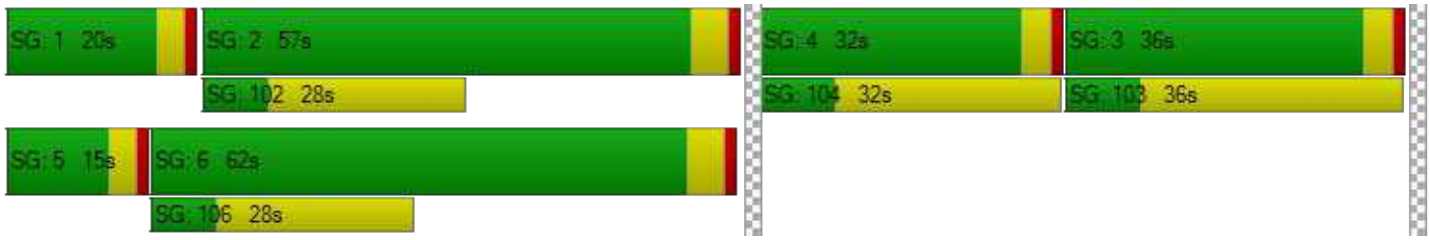
d_M, Delay for Movement [s/veh]	70.85	14.75	15.03	66.10	20.27	21.00	54.84	54.84	62.92	64.46	64.46	64.46
Movement LOS	E	B	B	E	C	C	D	D	E	E	E	E
d_A, Approach Delay [s/veh]	17.39			24.86			62.24			64.46		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	29.24											
Intersection LOS	C											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.93	60.93	61.85	61.85
l_p,int, Pedestrian LOS Score for Intersectio	2.948	3.181	2.404	2.147
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	718	787	439	384
d_b, Bicycle Delay [s]	29.77	26.66	44.13	47.30
l_b,int, Bicycle LOS Score for Intersection	2.249	2.940	2.104	2.088
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	52.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	300	700	93	18	947	359	466	49	189	99	83	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	300	700	93	18	947	359	466	49	189	99	83	45
Peak Hour Factor	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	191	25	5	258	98	127	13	52	27	23	12
Total Analysis Volume [veh/h]	327	763	101	20	1033	391	508	53	206	108	91	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	50	50	50	50	50	50	50	50	50	0	50	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	45	45	22	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	84	84	4	68	68	27	27	27	16	16
g / C, Green / Cycle	0.14	0.60	0.60	0.03	0.49	0.49	0.20	0.20	0.20	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.18	0.24	0.24	0.01	0.39	0.41	0.16	0.16	0.13	0.06	0.08
s, saturation flow rate [veh/h]	1781	1870	1784	1781	1870	1670	1781	1797	1558	1781	1748
c, Capacity [veh/h]	255	1123	1071	54	912	815	348	351	304	208	204
d1, Uniform Delay [s]	60.04	14.62	14.66	66.62	30.37	31.18	53.83	53.80	52.14	58.21	59.44
k, delay calibration	0.05	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	130.54	1.03	1.09	1.55	7.69	10.25	3.28	3.21	1.96	1.49	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.28	0.39	0.40	0.37	0.81	0.84	0.80	0.80	0.68	0.52	0.69
d, Delay for Lane Group [s/veh]	190.58	15.65	15.75	68.17	38.06	41.42	57.12	57.02	54.10	59.71	62.48
Lane Group LOS	F	B	B	E	D	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.24	7.46	7.21	0.72	22.44	21.85	9.83	9.87	6.95	3.73	5.00
50th-Percentile Queue Length [ft/ln]	456.01	186.61	180.27	18.09	560.93	546.15	245.65	246.87	173.75	93.34	125.00
95th-Percentile Queue Length [veh/ln]	28.05	11.95	11.61	1.30	30.21	29.51	14.97	15.03	11.27	6.72	8.67
95th-Percentile Queue Length [ft/ln]	701.13	298.63	290.37	32.57	755.14	737.79	374.17	375.71	281.83	168.02	216.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	190.58	15.70	15.75	68.17	39.02	41.42	57.07	57.02	54.10	59.71	62.48	62.48
Movement LOS	F	B	B	E	D	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	63.72			40.07			56.27			61.27		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	52.63											
Intersection LOS	D											
Intersection V/C	0.856											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.47	59.47	59.47	59.47
l_p,int, Pedestrian LOS Score for Intersectio	2.955	3.064	2.472	2.076
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	457	468
d_b, Bicycle Delay [s]	35.48	35.50	41.76	41.10
l_b,int, Bicycle LOS Score for Intersection	2.542	2.751	2.825	1.969
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	51.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	3	770	60	432	776	39	101	24	5	43	90	227
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	770	60	432	776	39	101	24	5	43	90	227
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	198	15	111	200	10	26	6	1	11	23	58
Total Analysis Volume [veh/h]	3	793	62	445	799	40	104	25	5	44	93	234
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing m	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	4.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	105	70	105	35	105	70	45	45	45	0	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	0	7	0	0	0	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	0	17	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	69	69	32	104	104	42	42
g / C, Green / Cycle	0.46	0.46	0.21	0.69	0.69	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.25	0.23	0.23	0.22	0.21
s, saturation flow rate [veh/h]	1865	1651	1781	1870	1834	623	1754
c, Capacity [veh/h]	879	757	380	1294	1269	215	513
d1, Uniform Delay [s]	29.03	29.10	58.98	9.19	9.20	54.23	49.91
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.39	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.17	2.68	101.53	0.67	0.69	10.17	6.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.53	1.17	0.33	0.33	0.62	0.72
d, Delay for Lane Group [s/veh]	31.20	31.78	160.51	9.87	9.90	64.39	56.58
Lane Group LOS	C	C	F	A	A	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.19	10.95	25.05	5.54	5.47	5.58	13.77
50th-Percentile Queue Length [ft/ln]	304.70	273.68	626.19	138.57	136.80	139.50	344.35
95th-Percentile Queue Length [veh/ln]	17.91	16.37	36.20	9.40	9.31	9.45	19.86
95th-Percentile Queue Length [ft/ln]	447.83	409.34	904.98	235.10	232.70	236.35	496.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.20	31.45	31.78	160.51	9.88	9.90	64.39	64.39	64.39	56.58	56.58	56.58
Movement LOS	C	C	C	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	31.47			62.09			64.39			56.58		
Approach LOS	C			E			E			E		
d_I, Intersection Delay [s/veh]	51.51											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	99.9	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	64.39	8.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.022	1.771	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	865	1332	537	537
d_b, Bicycle Delay [s]	24.15	8.37	40.21	40.13
l_b,int, Bicycle LOS Score for Intersection	2.267	2.619	1.781	2.172
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	145	513	427	638	431	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	513	427	638	431	81
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	135	112	168	113	21
Total Analysis Volume [veh/h]	153	540	449	672	454	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing m	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lag	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	35	34	34	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	39	38	38	91	53	0
Vehicle Extension [s]	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.5	2.5	6.1	0.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	Yes	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	4.50	8.10	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.50	6.10	0.00
g_i, Effective Green Time [s]	35	73	33	85	53
g / C, Green / Cycle	0.27	0.56	0.26	0.65	0.40
(v / s)_i Volume / Saturation Flow Rate	0.09	0.34	0.25	0.36	0.30
s, saturation flow rate [veh/h]	1781	1576	1781	1870	1805
c, Capacity [veh/h]	485	860	459	1216	731
d1, Uniform Delay [s]	37.69	20.38	47.92	12.42	32.83
k, delay calibration	0.04	0.50	0.43	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	3.46	34.05	1.81	6.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.63	0.98	0.55	0.74
d, Delay for Lane Group [s/veh]	37.82	23.84	81.97	14.23	39.38
Lane Group LOS	D	C	F	B	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.94	11.91	18.57	10.60	15.45
50th-Percentile Queue Length [ft/ln]	98.41	297.67	464.20	264.93	386.35
95th-Percentile Queue Length [veh/ln]	7.09	17.57	25.64	15.94	21.90
95th-Percentile Queue Length [ft/ln]	177.15	439.14	640.88	398.40	547.52

Movement, Approach, & Intersection Results

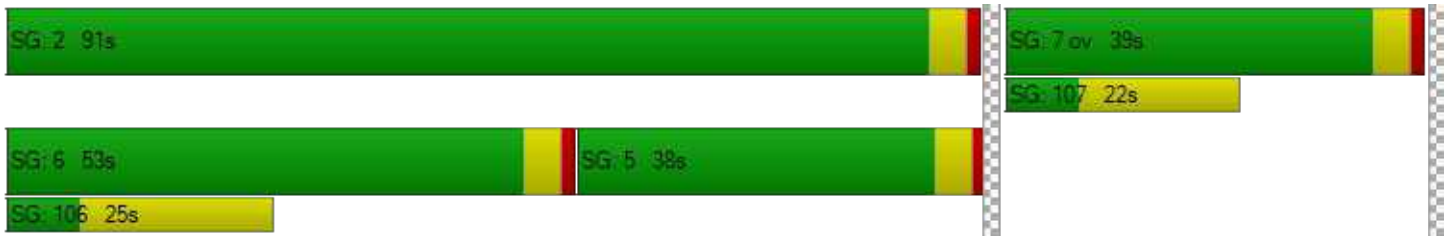
d_M, Delay for Movement [s/veh]	37.82	23.84	81.97	14.23	39.38	39.38
Movement LOS	D	C	F	B	D	D
d_A, Approach Delay [s/veh]	26.93		41.36		39.38	
Approach LOS	C		D		D	
d_I, Intersection Delay [s/veh]	36.66					
Intersection LOS	D					
Intersection V/C	0.671					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	54.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.357	2.750	0.000
Crosswalk LOS	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	531	1331	746
d_b, Bicycle Delay [s]	35.28	7.38	25.67
l_b,int, Bicycle LOS Score for Intersection	1.560	3.409	2.449
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	471.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.900

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	414	118	88	257	24	352	77	691	121	367	559	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	414	118	88	257	24	352	77	691	121	367	559	19
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	31	23	68	6	94	20	184	32	98	149	5
Total Analysis Volume [veh/h]	440	126	94	273	26	374	82	735	129	390	595	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing m	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	35	35	35	50	35	50	10	35	35	10	50	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	53	38	53	82	38	82	10	53	38	39	82	0
Vehicle Extension [s]	3.0	3.0	3.0	2.5	3.0	2.5	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	6.1	0.0	6.1	0.0	0.0	0.0	0.5	6.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		Yes	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	8.10	8.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	6.10	6.10
g_i, Effective Green Time [s]	41	41	41	41	8	51	51	32	69	69
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.06	0.39	0.39	0.25	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.45	0.13	0.39	0.24	0.05	0.21	0.08	0.22	0.17	0.17
s, saturation flow rate [veh/h]	985	1717	759	1545	1781	3560	1525	1781	1870	1842
c, Capacity [veh/h]	55	537	291	484	110	1393	596	438	996	981
d1, Uniform Delay [s]	64.99	35.19	54.42	40.12	60.00	30.36	26.22	47.33	17.03	17.04
k, delay calibration	0.50	0.11	0.50	0.36	0.13	0.50	0.50	0.35	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3157.11	0.50	60.41	8.53	11.56	1.43	0.83	17.48	0.81	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	7.93	0.41	1.03	0.77	0.75	0.53	0.22	0.89	0.31	0.31
d, Delay for Lane Group [s/veh]	3222.11	35.69	114.82	48.65	71.56	31.79	27.05	64.80	17.84	17.87
Lane Group LOS	F	D	F	D	E	C	C	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	50.50	5.73	14.53	11.88	3.00	9.01	2.78	14.17	5.32	5.27
50th-Percentile Queue Length [ft/ln]	1262.53	143.15	363.34	296.97	74.94	225.24	69.62	354.24	133.03	131.70
95th-Percentile Queue Length [veh/ln]	85.40	9.65	21.16	17.53	5.40	13.93	5.01	20.34	9.10	9.03
95th-Percentile Queue Length [ft/ln]	2134.95	241.26	528.99	438.27	134.89	348.31	125.32	508.58	227.61	225.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3222.11	35.69	35.69	114.82	114.82	48.65	71.56	31.79	27.05	64.80	17.85	17.87
Movement LOS	F	D	D	F	F	D	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	2159.97			78.05			34.59			36.07		
Approach LOS	F			E			C			D		
d_I, Intersection Delay [s/veh]	471.10											
Intersection LOS	F											
Intersection V/C	0.900											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.46	54.46	54.46	54.46
l_p,int, Pedestrian LOS Score for Intersectio	2.129	2.386	3.310	3.524
Crosswalk LOS	B	B	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	746	1192
d_b, Bicycle Delay [s]	35.90	36.19	25.78	10.67
l_b,int, Bicycle LOS Score for Intersection	2.649	2.670	2.340	2.389
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.204

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	135	1	378	10	2	68	29	743	8	78	752	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	1	378	10	2	68	29	743	8	78	752	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	105	3	1	19	8	206	2	22	209	3
Total Analysis Volume [veh/h]	150	1	420	11	2	76	32	826	9	87	836	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	4.41	0.02	1.15	0.00	0.03	0.20	0.04	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	2214.55	2170.98	2118.58	10000.0	10000.0	10000.0	9.75	0.00	0.00	10.06	0.00	0.00
Movement LOS	F	F	F	F	F	F	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	62.04	62.04	62.04	13.58	13.58	13.58	0.13	0.00	0.00	0.37	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1550.97	1550.97	1550.97	339.56	339.56	339.56	3.16	0.00	0.00	9.13	0.00	0.00
d_A, Approach Delay [s/veh]	2143.88			10000.00			0.36			0.94		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	859.20											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	126.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

Intersection Setup

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3777	95	333	1116	87	1378
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3777	95	333	1116	87	1378
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	964	24	85	285	22	352
Total Analysis Volume [veh/h]	3854	97	340	1139	89	1406
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	200
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	198.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	175	50	50	50	50	50
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	124	154	30	154	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	0	4	4
Pedestrian Clearance [s]	35	5	0	5	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	296	296	296	296	296	296
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	178	178	51	233	53	108
g / C, Green / Cycle	0.60	0.60	0.17	0.79	0.18	0.36
(v / s)_i Volume / Saturation Flow Rate	0.76	0.06	0.10	0.22	0.03	0.33
s, saturation flow rate [veh/h]	5094	1578	3459	5094	3459	4220
c, Capacity [veh/h]	3063	949	601	4011	620	1497
d1, Uniform Delay [s]	58.97	25.04	111.95	8.61	102.29	92.35
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	116.83	0.05	0.84	0.04	0.11	6.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.26	0.10	0.57	0.28	0.14	0.94
d, Delay for Lane Group [s/veh]	175.80	25.09	112.78	8.65	102.40	98.84
Lane Group LOS	F	C	F	A	F	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	106.76	2.98	12.11	6.59	2.95	35.99
50th-Percentile Queue Length [ft/ln]	2668.89	74.55	302.83	164.80	73.72	899.76
95th-Percentile Queue Length [veh/ln]	148.30	5.37	17.82	10.80	5.31	45.83
95th-Percentile Queue Length [ft/ln]	3707.55	134.20	445.53	270.07	132.70	1145.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	175.80	25.09	112.78	8.65	102.40	98.84
Movement LOS	F	C	F	A	F	F
d_A, Approach Delay [s/veh]	172.10		32.59		99.05	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	126.54					
Intersection LOS	F					
Intersection V/C	0.975					

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	140.06	0.00	139.09
l_p,int, Pedestrian LOS Score for Intersectio	3.972	0.000	3.055
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	777	1001	264
d_b, Bicycle Delay [s]	55.30	36.94	111.53
l_b,int, Bicycle LOS Score for Intersection	3.733	2.373	1.670
Bicycle LOS	D	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	174.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.008

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	116	27	1399	49	194	82	32	2089	490	402	977	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	27	1399	49	194	82	32	2089	490	402	977	6
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	7	364	13	50	21	8	543	127	105	254	2
Total Analysis Volume [veh/h]	121	28	1456	51	202	85	33	2174	510	418	1017	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing m	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	9	15	43	4	11	11	68	40	40	68	60	60
g / C, Green / Cycle	0.09	0.15	0.42	0.04	0.11	0.11	0.66	0.39	0.39	0.66	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.07	0.02	0.35	0.03	0.13	0.06	0.03	0.70	0.53	0.29	0.20	0.00
s, saturation flow rate [veh/h]	1781	1593	4184	1781	1593	1464	1158	3097	966	1457	5094	1589
c, Capacity [veh/h]	154	233	1751	67	169	155	766	1208	377	1023	3000	936
d1, Uniform Delay [s]	45.96	38.04	26.46	48.89	45.87	43.32	6.47	31.28	31.28	17.71	10.83	8.70
k, delay calibration	0.11	0.11	0.25	0.11	0.14	0.11	0.11	0.14	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.63	0.23	2.48	15.61	103.67	2.99	0.02	360.53	175.21	0.26	0.07	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.12	0.83	0.76	1.20	0.55	0.04	1.80	1.35	0.41	0.34	0.01
d, Delay for Lane Group [s/veh]	54.59	38.27	28.94	64.50	149.53	46.31	6.50	391.81	206.49	17.97	10.90	8.71
Lane Group LOS	D	D	C	E	F	D	A	F	F	B	B	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	3.31	0.31	10.19	1.60	4.60	2.20	0.11	49.90	27.30	1.62	3.75	0.05
50th-Percentile Queue Length [ft/ln]	82.85	7.65	254.81	40.08	115.09	54.89	2.85	1247.47	682.51	40.54	93.70	1.34
95th-Percentile Queue Length [veh/ln]	5.97	0.55	15.43	2.89	8.29	3.95	0.21	81.20	42.71	2.92	6.75	0.10
95th-Percentile Queue Length [ft/ln]	149.13	13.77	385.71	72.15	207.16	98.80	5.14	2030.06	1067.78	72.98	168.66	2.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.59	38.27	28.94	64.50	149.53	46.31	6.50	391.81	206.49	17.97	10.90	8.71
Movement LOS	D	D	C	E	F	D	A	F	F	B	B	A
d_A, Approach Delay [s/veh]	31.03			110.74			352.34			12.94		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	174.27											
Intersection LOS	F											
Intersection V/C	1.008											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.64	0.00	42.64	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.385	0.000	3.183	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	734	603	2907	1776
d_b, Bicycle Delay [s]	20.56	25.04	10.55	0.64
l_b,int, Bicycle LOS Score for Intersection	2.884	1.838	3.054	2.352
Bicycle LOS	C	A	C	B

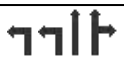
Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	292.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.870

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	144	1307	21	330	709	104	62	9	70	69	16	454
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	1307	21	330	709	104	62	9	70	69	16	454
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	341	5	86	185	27	16	2	18	18	4	119
Total Analysis Volume [veh/h]	150	1366	22	345	741	109	65	9	73	72	17	474
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			86			11			85		
v_di, Inbound Pedestrian Volume crossing m	11			85			12			86		
v_co, Outbound Pedestrian Volume crossing	13			14			14			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			14			14			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			18			7			15		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	85	79	16	79	85	32	32	32	32	32	32
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	92	77	77	92	83	83	31	31	31	31
g / C, Green / Cycle	0.71	0.59	0.59	0.71	0.64	0.64	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.48	0.83	0.83	0.40	0.52	0.53	0.07	0.12	0.06	0.82
s, saturation flow rate [veh/h]	315	837	831	866	837	787	905	692	1284	599
c, Capacity [veh/h]	274	497	494	246	536	504	55	164	194	143
d1, Uniform Delay [s]	20.24	26.34	26.34	35.12	17.45	17.80	64.89	42.84	52.98	49.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.70	191.50	193.30	203.78	12.52	14.27	110.67	0.87	1.17	1113.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	1.40	1.40	1.40	0.81	0.83	1.17	0.50	0.37	3.44
d, Delay for Lane Group [s/veh]	27.94	217.85	219.64	238.90	29.97	32.07	175.57	43.71	54.16	1163.35
Lane Group LOS	C	F	F	F	C	C	F	D	D	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.77	40.29	40.27	8.08	10.96	10.89	3.56	2.35	2.01	48.87
50th-Percentile Queue Length [ft/ln]	44.17	1007.18	1006.75	202.09	274.04	272.27	88.99	58.83	50.32	1221.67
95th-Percentile Queue Length [veh/ln]	3.18	63.30	63.36	14.55	16.39	16.30	6.41	4.24	3.62	80.75
95th-Percentile Queue Length [ft/ln]	79.50	1582.48	1583.91	363.77	409.78	407.58	160.18	105.90	90.58	2018.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.94	218.73	219.64	238.90	30.84	32.07	175.57	43.71	43.71	54.16	1163.35	1163.35
Movement LOS	C	F	F	F	C	C	F	D	D	D	F	F
d_A, Approach Delay [s/veh]	200.13			91.02			102.02			1021.50		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	292.38											
Intersection LOS	F											
Intersection V/C	1.870											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
l_p,int, Pedestrian LOS Score for Intersectio	3.164	3.137	2.212	2.638
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1155	443	447
d_b, Bicycle Delay [s]	9.21	11.70	39.48	39.48
l_b,int, Bicycle LOS Score for Intersection	2.828	2.545	1.802	2.489
Bicycle LOS	C	B	A	B

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	60.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.054

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	133	1381	801	281	64	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	1381	801	281	64	79
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	357	207	73	17	20
Total Analysis Volume [veh/h]	138	1428	828	291	66	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing m	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	115	95	95	30	30
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	17	122	102	102	16	16
g / C, Green / Cycle	0.12	0.84	0.70	0.70	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.11	0.90	0.67	0.74	0.07	0.09
s, saturation flow rate [veh/h]	1265	1593	837	755	994	893
c, Capacity [veh/h]	148	1341	589	531	109	98
d1, Uniform Delay [s]	63.36	11.46	19.18	21.45	61.47	63.01
k, delay calibration	0.24	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.24	43.91	26.64	53.86	1.99	6.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	1.07	0.95	1.05	0.60	0.84
d, Delay for Lane Group [s/veh]	99.60	55.38	45.82	75.31	63.46	69.82
Lane Group LOS	F	F	D	F	E	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.48	21.05	18.87	23.35	2.39	3.15
50th-Percentile Queue Length [ft/ln]	162.03	526.29	471.77	583.87	59.73	78.79
95th-Percentile Queue Length [veh/ln]	10.66	30.21	25.99	32.70	4.30	5.67
95th-Percentile Queue Length [ft/ln]	266.40	755.37	649.87	817.60	107.52	141.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	99.60	55.38	55.38	75.31	63.46	69.82
Movement LOS	F	F	E	E	E	E
d_A, Approach Delay [s/veh]	59.27		60.56		66.98	
Approach LOS	E		E		E	
d_I, Intersection Delay [s/veh]	60.19					
Intersection LOS	E					
Intersection V/C	1.054					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.75	63.75	61.89
l_p,int, Pedestrian LOS Score for Intersectio	2.968	3.004	2.150
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1532	1256	373
d_b, Bicycle Delay [s]	3.97	10.06	48.03
l_b,int, Bicycle LOS Score for Intersection	2.852	2.483	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	543.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.946

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1407	420	68	873	705	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1407	420	68	873	705	77
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	357	106	17	221	179	20
Total Analysis Volume [veh/h]	1427	426	69	885	715	78
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	110	110	21	124	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	108	108	16	124	21	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	104	104	13	120	18	18
g / C, Green / Cycle	0.72	0.72	0.09	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.10	0.76	0.11	0.68	0.62	0.62
s, saturation flow rate [veh/h]	1302	561	647	1293	647	632
c, Capacity [veh/h]	933	402	58	1070	79	78
d1, Uniform Delay [s]	20.59	19.21	66.07	6.84	63.71	63.71
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	243.55	61.65	136.19	7.35	1839.35	1860.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.53	1.06	1.18	0.83	5.03	5.07
d, Delay for Lane Group [s/veh]	264.13	80.86	202.26	14.20	1903.06	1924.16
Lane Group LOS	F	F	F	B	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	44.86	17.57	4.35	6.16	43.55	42.99
50th-Percentile Queue Length [ft/ln]	1121.53	439.16	108.82	154.00	1088.68	1074.67
95th-Percentile Queue Length [veh/ln]	73.58	25.64	7.84	10.23	69.09	68.27
95th-Percentile Queue Length [ft/ln]	1839.44	641.07	195.88	255.76	1727.31	1706.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	264.13	80.86	202.26	14.20	1912.38	1924.16
Movement LOS	F	F	F	B	F	F
d_A, Approach Delay [s/veh]	222.00		27.80		1913.53	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	543.14					
Intersection LOS	F					
Intersection V/C	1.946					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	61.98
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.382
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1654	245
d_b, Bicycle Delay [s]	5.84	2.18	55.91
l_b,int, Bicycle LOS Score for Intersection	3.088	2.347	2.868
Bicycle LOS	C	B	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	300.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.370

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	322	1429	522	93	1222	17	44	177	526	487	178	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	322	1429	522	93	1222	17	44	177	526	487	178	55
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	380	139	25	325	5	12	47	140	130	47	15
Total Analysis Volume [veh/h]	343	1520	555	99	1300	18	47	188	560	518	189	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11			20			10			19		
v_di, Inbound Pedestrian Volume crossing m	10			19			11			20		
v_co, Outbound Pedestrian Volume crossing	3			7			7			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			7			7			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	140.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	4
Maximum Green [s]	21	40	40	21	40	40	5	25	25	5	21	5
Amber [s]	3.0	4.4	4.4	3.0	4.0	4.0	3.0	3.6	3.6	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0
Split [s]	31	51	51	14	34	34	14	34	34	51	31	51
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.4	3.4	1.0	3.0	3.0	2.0	2.6	2.6	2.0	1.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.40	5.40	3.00	5.00	5.00	4.00	4.60	4.60	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.40	3.40	1.00	3.00	3.00	2.00	2.60	2.60	2.00	1.00	1.00
g_i, Effective Green Time [s]	28	46	46	11	29	29	9	33	33	48	24	24
g / C, Green / Cycle	0.22	0.35	0.35	0.08	0.23	0.23	0.07	0.25	0.25	0.37	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.27	0.55	0.59	0.11	0.46	0.46	0.04	0.19	0.37	0.15	0.14	0.04
s, saturation flow rate [veh/h]	1265	2530	1156	937	1874	975	1132	984	1526	3357	1329	1461
c, Capacity [veh/h]	273	899	411	79	427	222	55	249	386	1228	244	269
d1, Uniform Delay [s]	51.00	41.90	41.90	59.50	50.20	50.20	65.00	44.82	47.90	30.91	50.48	44.96
k, delay calibration	0.50	0.50	0.50	0.15	0.50	0.50	0.11	0.21	0.50	0.11	0.17	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	142.56	254.88	303.55	139.82	472.05	481.94	27.92	8.76	216.29	0.23	7.80	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.26	1.55	1.65	1.25	2.03	2.04	0.85	0.75	1.45	0.42	0.77	0.22
d, Delay for Lane Group [s/veh]	193.56	296.78	345.45	199.32	522.25	532.14	92.92	53.58	264.19	31.14	58.27	45.12
Lane Group LOS	F	F	F	F	F	F	F	D	F	C	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.48	45.75	47.36	5.71	34.94	36.95	2.01	6.19	35.49	6.16	6.39	1.64
50th-Percentile Queue Length [ft/ln]	486.89	1143.71	1184.08	142.85	873.56	923.83	50.28	154.87	887.18	153.95	159.69	41.01
95th-Percentile Queue Length [veh/ln]	29.91	71.54	75.19	10.29	57.26	60.29	3.62	10.28	54.30	10.23	10.53	2.95
95th-Percentile Queue Length [ft/ln]	747.83	1788.57	1879.69	257.13	1431.50	1507.37	90.50	256.92	1357.60	255.69	263.31	73.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	193.56	300.72	345.45	199.32	525.55	532.14	92.92	53.58	264.19	31.14	58.27	45.12
Movement LOS	F	F	F	F	F	F	F	D	F	C	E	D
d_A, Approach Delay [s/veh]	295.79			502.84			204.26			38.91		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	300.21											
Intersection LOS	F											
Intersection V/C	1.370											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.504	3.033	2.477	2.733
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	702	446	452	431
d_b, Bicycle Delay [s]	27.40	39.33	39.00	40.14
l_b,int, Bicycle LOS Score for Intersection	2.890	2.339	2.871	2.824
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	52	1263	1052	423	384	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	1263	1052	423	384	54
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	339	282	113	103	14
Total Analysis Volume [veh/h]	56	1355	1129	454	412	58
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	13	100	87	87	40	40
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	31	31	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	57	57	57	57	57	57
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	32	26	26	15	15
g / C, Green / Cycle	0.04	0.56	0.46	0.46	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.03	0.38	0.32	0.29	0.23	0.04
s, saturation flow rate [veh/h]	1781	3560	3560	1550	1781	1566
c, Capacity [veh/h]	74	2010	1645	716	474	417
d1, Uniform Delay [s]	27.19	8.77	12.15	11.61	20.08	16.02
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.79	0.57	0.73	1.33	1.96	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.67	0.69	0.63	0.87	0.14
d, Delay for Lane Group [s/veh]	32.98	9.34	12.88	12.94	22.05	16.08
Lane Group LOS	C	A	B	B	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.83	4.57	4.66	3.72	4.97	0.54
50th-Percentile Queue Length [ft/ln]	20.82	114.21	116.53	92.98	124.14	13.38
95th-Percentile Queue Length [veh/ln]	1.50	8.07	8.20	6.69	8.62	0.96
95th-Percentile Queue Length [ft/ln]	37.47	201.85	205.04	167.36	215.50	24.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.98	9.34	12.88	12.94	22.05	16.08
Movement LOS	C	A	B	B	C	B
d_A, Approach Delay [s/veh]	10.28		12.90		21.31	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	12.97					
Intersection LOS	B					
Intersection V/C	0.758					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	18.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.233
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3304	2850	1252
d_b, Bicycle Delay [s]	12.22	5.18	4.01
l_b,int, Bicycle LOS Score for Intersection	2.724	2.866	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	985	6	46	740	14	49	34	14	29	40	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	985	6	46	740	14	49	34	14	29	40	37
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	263	2	12	197	4	13	9	4	8	11	10
Total Analysis Volume [veh/h]	4	1050	6	49	789	15	52	36	15	31	43	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	0	32	32	2	34	5	5	5	6	6
g / C, Green / Cycle	0.00	0.51	0.51	0.04	0.54	0.08	0.08	0.08	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.00	0.28	0.28	0.03	0.43	0.02	0.02	0.01	0.02	0.05
s, saturation flow rate [veh/h]	1781	1870	1865	1781	1863	1781	1853	1458	1781	1684
c, Capacity [veh/h]	8	947	945	65	1004	136	141	111	170	161
d1, Uniform Delay [s]	31.40	10.73	10.73	30.15	11.82	27.65	27.63	27.23	26.30	27.16
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.73	1.10	1.11	15.54	3.22	1.36	1.26	0.55	0.51	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.56	0.56	0.75	0.80	0.32	0.31	0.14	0.18	0.51
d, Delay for Lane Group [s/veh]	76.12	11.83	11.84	45.69	15.04	29.00	28.89	27.77	26.80	29.63
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	4.71	4.70	1.00	8.57	0.69	0.69	0.23	0.44	1.25
50th-Percentile Queue Length [ft/ln]	3.88	117.63	117.45	24.98	214.31	17.17	17.36	5.80	11.00	31.19
95th-Percentile Queue Length [veh/ln]	0.28	8.26	8.25	1.80	13.37	1.24	1.25	0.42	0.79	2.25
95th-Percentile Queue Length [ft/ln]	6.99	206.57	206.31	44.96	334.35	30.91	31.25	10.44	19.81	56.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.12	11.83	11.84	45.69	15.04	15.04	28.98	28.89	27.77	26.80	29.63	29.63
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	12.08			16.80			28.77			28.85		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.67											
Intersection LOS	B											
Intersection V/C	0.570											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.50	21.50	21.50	21.50
l_p,int, Pedestrian LOS Score for Intersectio	2.496	2.703	2.125	1.976
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	634	634	951	951
d_b, Bicycle Delay [s]	14.73	14.78	8.68	8.68
l_b,int, Bicycle LOS Score for Intersection	2.434	2.967	1.730	1.746
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	32	927	5	9	643	137	211	7	52	9	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	927	5	9	643	137	211	7	52	9	8	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	244	1	2	169	36	56	2	14	2	2	2
Total Analysis Volume [veh/h]	34	976	5	9	677	144	222	7	55	9	8	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing m	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	90	90	90	90	90	90	30	30	30	0	30	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	86	86	86	86	26	26
g / C, Green / Cycle	0.72	0.72	0.72	0.72	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.53	0.02	0.46	0.20	0.01
s, saturation flow rate [veh/h]	666	1868	573	1802	1391	1696
c, Capacity [veh/h]	368	1338	281	1290	353	407
d1, Uniform Delay [s]	18.29	10.16	22.95	8.87	45.90	37.39
k, delay calibration	0.50	0.50	0.50	0.50	0.40	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.50	3.59	0.21	2.41	14.42	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.73	0.03	0.64	0.80	0.06
d, Delay for Lane Group [s/veh]	18.79	13.76	23.16	11.27	60.33	37.45
Lane Group LOS	B	B	C	B	E	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.60	15.39	0.18	10.78	9.69	0.58
50th-Percentile Queue Length [ft/ln]	14.95	384.65	4.43	269.48	242.29	14.45
95th-Percentile Queue Length [veh/ln]	1.08	21.82	0.32	16.16	14.80	1.04
95th-Percentile Queue Length [ft/ln]	26.90	545.47	7.97	404.09	369.93	26.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.79	13.76	13.76	23.16	11.27	11.27	60.33	60.33	60.33	37.45	37.45	37.45
Movement LOS	B	B	B	C	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	13.93			11.40			60.33			37.45		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	19.34											
Intersection LOS	B											
Intersection V/C	0.775											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.45	49.45	49.45	49.45
l_p,int, Pedestrian LOS Score for Intersectio	2.442	2.931	2.006	1.760
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1433	432	432
d_b, Bicycle Delay [s]	4.84	4.83	36.92	36.92
l_b,int, Bicycle LOS Score for Intersection	3.234	2.929	2.028	1.599
Bicycle LOS	C	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	808	134	33	638	7	76	108	3	132	45	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	808	134	33	638	7	76	108	3	132	45	129
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	214	35	9	169	2	20	29	1	35	12	34
Total Analysis Volume [veh/h]	3	855	142	35	675	7	80	114	3	140	48	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing m	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	69
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	23	23	23	23	23	47	47	47	0	47	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	43	43	43	43	18	18	18	18
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.00	0.55	0.06	0.37	0.07	0.06	0.11	0.11
s, saturation flow rate [veh/h]	758	1814	565	1866	1195	1860	1271	1625
c, Capacity [veh/h]	408	1138	201	1171	248	472	317	412
d1, Uniform Delay [s]	12.46	10.64	25.30	7.55	28.65	20.54	26.92	21.72
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	9.53	1.88	2.12	0.74	0.27	0.97	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.88	0.17	0.58	0.32	0.25	0.44	0.45
d, Delay for Lane Group [s/veh]	12.49	20.16	27.19	9.67	29.39	20.81	27.89	22.48
Lane Group LOS	B	C	C	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	12.94	0.60	5.51	1.27	1.49	2.18	2.52
50th-Percentile Queue Length [ft/ln]	0.76	323.61	14.98	137.76	31.75	37.27	54.50	63.03
95th-Percentile Queue Length [veh/ln]	0.05	18.84	1.08	9.36	2.29	2.68	3.92	4.54
95th-Percentile Queue Length [ft/ln]	1.36	471.12	26.97	234.00	57.14	67.09	98.10	113.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.49	20.16	20.16	27.19	9.67	9.67	29.39	20.81	20.81	27.89	22.48	22.48
Movement LOS	B	C	C	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.14			10.52			24.29			24.81		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	18.10											
Intersection LOS	B											
Intersection V/C	0.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.40	24.40	24.40	24.40
l_p,int, Pedestrian LOS Score for Intersectio	2.617	2.594	1.999	2.142
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	547	547	1243	1243
d_b, Bicycle Delay [s]	18.35	18.32	4.96	4.97
l_b,int, Bicycle LOS Score for Intersection	3.210	2.743	1.885	2.096
Bicycle LOS	C	B	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	66.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.841

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	22	386	279	339	138	376	111	430	303	356	517	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	22	386	279	339	138	376	111	430	303	356	517	27
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	101	73	88	36	98	29	112	79	93	135	7
Total Analysis Volume [veh/h]	23	403	291	354	144	392	116	449	316	372	540	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			6			12			6		
v_di, Inbound Pedestrian Volume crossing m	12			6			12			6		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	50			19			4			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	40	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	40	0	34	34	34	0	38	0	29	29	29
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	33	33	33	38	38	38	24	24	24	24	26	26	26
g / C, Green / Cycle	0.23	0.23	0.23	0.27	0.27	0.27	0.17	0.17	0.17	0.17	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.22	0.20	0.14	0.14	0.25	0.07	0.15	0.15	0.15	0.17	0.17	0.17
s, saturation flow rate [veh/h]	1781	1870	1450	1781	1831	1546	1781	1870	1751	1544	1781	1851	1826
c, Capacity [veh/h]	414	435	337	489	503	425	309	325	304	268	334	347	343
d1, Uniform Delay [s]	41.80	52.60	50.51	42.82	42.69	48.92	51.19	56.06	56.16	56.07	55.82	55.82	55.92
k, delay calibration	0.11	0.28	0.24	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.29	0.29	0.30
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	18.44	13.10	3.71	3.48	28.04	0.75	5.91	6.68	8.38	21.68	21.07	22.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.93	0.86	0.51	0.50	0.92	0.38	0.84	0.85	0.87	0.91	0.91	0.92
d, Delay for Lane Group [s/veh]	41.86	71.04	63.61	46.53	46.17	76.96	51.95	61.97	62.84	64.45	77.50	76.89	78.48
Lane Group LOS	D	E	E	D	D	E	D	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.64	16.09	10.84	7.87	7.89	16.61	3.70	9.91	9.46	8.61	12.61	13.05	13.12
50th-Percentile Queue Length [ft/ln]	15.88	402.28	271.02	196.64	197.27	415.20	92.46	247.7	236.4	215.2	315.31	326.18	328.11
95th-Percentile Queue Length [veh/ln]	1.14	22.67	16.24	12.47	12.50	23.29	6.66	15.07	14.50	13.42	18.44	18.97	19.07
95th-Percentile Queue Length [ft/ln]	28.58	566.74	406.01	311.63	312.44	582.29	166.4	376.8	362.5	335.5	460.92	474.28	476.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.86	71.04	63.61	46.42	46.17	76.96	51.95	62.31	64.11	77.40	77.74	78.48
Movement LOS	D	E	E	D	D	E	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	67.09			59.83			61.56			77.62		
Approach LOS	E			E			E			E		
d_I, Intersection Delay [s/veh]	66.67											
Intersection LOS	E											
Intersection V/C	0.841											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.55	58.55	58.55	58.55
l_p,int, Pedestrian LOS Score for Intersectio	2.397	2.805	4.394	2.672
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	510	418	475	347
d_b, Bicycle Delay [s]	39.88	44.22	40.78	48.18
l_b,int, Bicycle LOS Score for Intersection	2.743	3.028	3.111	2.335
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	63.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	80	530	128	22	410	87	190	230	40	49	198	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	530	128	22	410	87	190	230	40	49	198	24
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	146	35	6	113	24	52	63	11	13	54	7
Total Analysis Volume [veh/h]	88	582	141	24	451	96	209	253	44	54	218	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			20			20			17		
v_di, Inbound Pedestrian Volume crossing m	17			20			20			18		
v_co, Outbound Pedestrian Volume crossing	33			29			34			29		
v_ci, Inbound Pedestrian Volume crossing mi	34			29			33			29		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			5			20			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	30	60	60	30	30	30	35	35	35	35	35	35
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	84	84	10	81	81	40	46	40	46	40	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	4.10	4.10	4.00	4.00	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.10	0.00	2.00	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	84	76	84	72	48	48	36	36
g / C, Green / Cycle	0.47	0.42	0.47	0.40	0.27	0.27	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.09	0.41	0.03	0.31	0.12	0.17	0.03	0.14
s, saturation flow rate [veh/h]	969	1765	799	1776	1781	1781	1781	1806
c, Capacity [veh/h]	273	749	138	711	474	474	355	360
d1, Uniform Delay [s]	35.02	50.49	41.52	46.74	54.94	58.20	59.48	66.69
k, delay calibration	0.11	0.41	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	22.24	0.60	7.83	2.97	6.16	0.91	9.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.96	0.17	0.77	0.44	0.63	0.15	0.68
d, Delay for Lane Group [s/veh]	35.69	72.72	42.12	54.56	57.91	64.36	60.39	76.52
Lane Group LOS	D	E	D	D	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.27	36.32	0.61	22.94	8.40	12.87	2.17	11.53
50th-Percentile Queue Length [ft/ln]	56.73	907.99	15.14	573.52	210.00	321.68	54.26	288.16
95th-Percentile Queue Length [veh/ln]	4.08	46.20	1.09	30.80	13.15	18.75	3.91	17.09
95th-Percentile Queue Length [ft/ln]	102.12	1155.08	27.25	769.89	328.83	468.75	97.67	427.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.69	72.72	72.72	42.12	54.56	54.56	57.91	64.36	64.36	60.39	76.52	76.52
Movement LOS	D	E	E	D	D	D	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	68.71			54.04			61.69			73.60		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	63.92											
Intersection LOS	E											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	79.34	79.34	79.34	79.34
l_p,int, Pedestrian LOS Score for Intersectio	2.459	2.379	2.277	2.223
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	881	848	460	393
d_b, Bicycle Delay [s]	28.18	29.95	53.90	58.28
l_b,int, Bicycle LOS Score for Intersection	2.898	2.502	2.395	2.051
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	30.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	340	101	19	239	36	161	238	15	22	200	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	340	101	19	239	36	161	238	15	22	200	77
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	95	28	5	67	10	45	66	4	6	56	21
Total Analysis Volume [veh/h]	23	379	113	21	267	40	180	266	17	25	223	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			2			9			3		
v_di, Inbound Pedestrian Volume crossing m	9			3			9			2		
v_co, Outbound Pedestrian Volume crossing	7			1			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			12			20			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	76	76	76	76
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	25	25	22	17
g / C, Green / Cycle	0.33	0.33	0.29	0.22
(v / s)_i Volume / Saturation Flow Rate	0.29	0.19	0.25	0.19
s, saturation flow rate [veh/h]	1746	1755	1823	1782
c, Capacity [veh/h]	627	631	521	393
d1, Uniform Delay [s]	24.11	20.83	26.04	28.49
k, delay calibration	0.26	0.11	0.19	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.45	0.67	8.86	3.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.52	0.89	0.85
d, Delay for Lane Group [s/veh]	30.56	21.50	34.90	32.41
Lane Group LOS	C	C	C	C
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	9.47	4.71	8.99	6.01
50th-Percentile Queue Length [ft/ln]	236.84	117.69	224.73	150.14
95th-Percentile Queue Length [veh/ln]	14.52	8.27	13.91	10.02
95th-Percentile Queue Length [ft/ln]	363.04	206.65	347.65	250.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.56	30.56	30.56	21.50	21.50	21.50	34.90	34.90	34.90	32.41	32.41	32.41
Movement LOS	C	C	C	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	30.56			21.50			34.90			32.41		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	30.35											
Intersection LOS	C											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.79	29.53	27.79	27.79
l_p,int, Pedestrian LOS Score for Intersectio	2.131	2.012	2.068	2.061
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	790	790	790	790
d_b, Bicycle Delay [s]	14.03	14.00	14.06	13.95
l_b,int, Bicycle LOS Score for Intersection	2.409	2.101	2.324	2.111
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	51.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.912

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	16	13	33	115	3	346	29	1468	112	319	1166	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.40	0.00	1.50	1.20	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	13	33	115	3	346	29	1468	112	319	1166	10
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	9	30	1	91	8	385	29	84	306	3
Total Analysis Volume [veh/h]	17	14	35	121	3	363	30	1539	117	334	1222	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			14			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	30	0	0	30	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	27	0	0	27	0	15	58	0	25	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	21	6	51	51	22	67	67
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.05	0.46	0.46	0.20	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.20	0.02	6.04	0.23	0.02	0.43	0.07	0.19	0.23	0.23
s, saturation flow rate [veh/h]	155	1590	21	1574	1810	3578	1565	1788	3583	1873
c, Capacity [veh/h]	80	304	69	301	99	1657	725	358	2181	1140
d1, Uniform Delay [s]	38.27	36.77	54.72	44.31	49.00	19.39	11.93	39.62	4.69	4.69
k, delay calibration	0.22	0.11	0.50	0.30	0.11	0.50	0.50	0.34	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.10	0.17	414.91	110.44	1.70	10.62	0.48	25.62	0.49	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.12	1.81	1.21	0.30	0.93	0.16	0.93	0.37	0.37
d, Delay for Lane Group [s/veh]	44.37	36.93	469.63	154.75	50.70	30.01	12.41	65.24	5.18	5.62
Lane Group LOS	D	D	F	F	D	C	B	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.85	0.82	9.80	17.33	0.82	16.57	1.28	10.80	2.13	2.37
50th-Percentile Queue Length [ft/ln]	21.14	20.48	245.09	433.19	20.61	414.25	32.07	270.02	53.17	59.13
95th-Percentile Queue Length [veh/ln]	1.52	1.47	17.65	26.44	1.48	23.25	2.31	16.19	3.83	4.26
95th-Percentile Queue Length [ft/ln]	38.05	36.87	441.17	661.12	37.10	581.15	57.73	404.76	95.70	106.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.37	44.37	36.93	469.63	469.63	154.75	50.70	30.01	12.41	65.24	5.33	5.62
Movement LOS	D	D	D	F	F	F	D	C	B	E	A	A
d_A, Approach Delay [s/veh]	40.43			234.92			29.16			18.11		
Approach LOS	D			F			C			B		
d_I, Intersection Delay [s/veh]	51.14											
Intersection LOS	D											
Intersection V/C	6.912											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.967	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	382	382	927	1109
d_b, Bicycle Delay [s]	36.05	36.05	15.93	10.93
l_b,int, Bicycle LOS Score for Intersection	1.669	2.363	2.951	2.421
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	277	207	99	57	229	43	120	1355	72	38	980	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	207	99	57	229	43	120	1355	72	38	980	195
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	55	26	15	60	11	32	357	19	10	258	51
Total Analysis Volume [veh/h]	292	218	104	60	241	45	126	1428	76	40	1033	205
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			1			9			2		
v_di, Inbound Pedestrian Volume crossing m	9			2			8			1		
v_co, Outbound Pedestrian Volume crossing	1			5			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			5			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			5			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	35	0	0	35	0	20	70	0	20	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	30	30	30	26	26	26	13	82	82	7	76	76
g / C, Green / Cycle	0.19	0.19	0.19	0.16	0.16	0.16	0.08	0.51	0.51	0.04	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.07	0.03	0.13	0.03	0.07	0.40	0.05	0.02	0.29	0.13
s, saturation flow rate [veh/h]	1781	1855	1517	1781	1870	1551	1781	3560	1540	1781	3560	1543
c, Capacity [veh/h]	332	345	282	289	304	252	148	1829	791	76	1687	731
d1, Uniform Delay [s]	61.74	61.71	56.78	58.17	64.52	57.84	70.23	19.12	12.67	73.99	20.67	17.22
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.49	3.32	0.80	0.35	4.68	0.34	12.45	3.38	0.24	5.53	1.67	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.75	0.37	0.21	0.79	0.18	0.85	0.78	0.10	0.53	0.61	0.28
d, Delay for Lane Group [s/veh]	65.23	65.04	57.58	58.52	69.20	58.18	82.68	22.50	12.91	79.52	22.34	18.17
Lane Group LOS	E	E	E	E	E	E	F	C	B	E	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.02	10.38	3.77	2.18	9.97	1.63	5.46	15.91	0.99	1.72	10.91	3.42
50th-Percentile Queue Length [ft/ln]	250.41	259.62	94.24	54.44	249.29	40.66	136.44	397.72	24.74	42.95	272.74	85.50
95th-Percentile Queue Length [veh/ln]	15.21	15.67	6.79	3.92	15.15	2.93	9.29	22.45	1.78	3.09	16.33	6.16
95th-Percentile Queue Length [ft/ln]	380.17	391.74	169.64	97.99	378.76	73.20	232.22	561.25	44.54	77.30	408.17	153.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.21	65.04	57.58	58.52	69.20	58.18	82.68	22.50	12.91	79.52	22.34	18.17
Movement LOS	E	E	E	E	E	E	F	C	B	E	C	B
d_A, Approach Delay [s/veh]	63.85			65.92			26.71			23.46		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	35.04											
Intersection LOS	D											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	72.26	72.26	72.26
l_p,int, Pedestrian LOS Score for Intersectio	2.449	2.298	3.018	2.976
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	356	784	779
d_b, Bicycle Delay [s]	54.26	54.23	29.64	29.96
l_b,int, Bicycle LOS Score for Intersection	2.573	2.131	2.904	2.614
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.678

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	128	287	107	123	295	53	74	1302	112	84	1022	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	287	107	123	295	53	74	1302	112	84	1022	50
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	74	28	32	76	14	19	335	29	22	263	13
Total Analysis Volume [veh/h]	132	295	110	127	303	55	76	1340	115	86	1051	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	6			0			0			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			0			0			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	10			10			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	20	40	0	20	40	0	21	83	0	18	79	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	33	33	13	31	31	9	87	87	10	88	88
g / C, Green / Cycle	0.10	0.21	0.21	0.08	0.19	0.19	0.05	0.54	0.54	0.06	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.07	0.16	0.07	0.07	0.16	0.04	0.04	0.38	0.07	0.05	0.30	0.03
s, saturation flow rate [veh/h]	1781	1870	1553	1781	1870	1552	1781	3560	1553	1781	3560	1536
c, Capacity [veh/h]	179	389	323	149	357	296	96	1927	841	107	1949	841
d1, Uniform Delay [s]	70.03	59.69	54.01	72.48	62.60	54.34	72.05	4.37	3.66	72.79	12.63	9.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	3.06	0.62	12.88	5.65	0.30	13.49	2.10	0.34	13.03	1.07	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.76	0.34	0.85	0.85	0.19	0.79	0.70	0.14	0.80	0.54	0.06
d, Delay for Lane Group [s/veh]	75.87	62.76	54.63	85.36	68.25	54.63	85.54	6.46	3.99	85.82	13.71	10.12
Lane Group LOS	E	E	D	F	E	D	F	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.62	11.75	3.91	5.74	12.61	1.92	3.35	3.25	0.51	3.83	7.33	0.57
50th-Percentile Queue Length [ft/ln]	140.45	293.64	97.68	143.57	315.28	48.08	83.77	81.14	12.75	95.71	183.27	14.13
95th-Percentile Queue Length [veh/ln]	9.51	17.37	7.03	9.67	18.44	3.46	6.03	5.84	0.92	6.89	11.77	1.02
95th-Percentile Queue Length [ft/ln]	237.63	434.15	175.82	241.82	460.89	86.55	150.79	146.06	22.94	172.28	294.28	25.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.87	62.76	54.63	85.36	68.25	54.63	85.54	6.46	3.99	85.82	13.71	10.12
Movement LOS	E	E	D	F	E	D	F	A	A	F	B	B
d_A, Approach Delay [s/veh]	64.32			71.19			10.20			18.77		
Approach LOS	E			E			B			B		
d_I, Intersection Delay [s/veh]	28.60											
Intersection LOS	C											
Intersection V/C	0.678											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.356	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	942	892
d_b, Bicycle Delay [s]	51.20	51.20	22.46	24.65
l_b,int, Bicycle LOS Score for Intersection	2.446	2.360	2.823	2.540
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	56	25	129	158	55	50	0	1452	66	0	1112	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	25	129	158	55	50	0	1452	66	0	1112	84
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9500	0.9560	0.9560	0.9500	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	7	34	41	14	13	0	380	17	0	291	22
Total Analysis Volume [veh/h]	59	26	135	165	58	52	0	1519	69	0	1163	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			14			13			0		
v_di, Inbound Pedestrian Volume crossing m	0			13			14			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			12			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	35	0	0	30	0	0	95	0	0	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	19	19	19	20	20	108	108	108	108
g / C, Green / Cycle	0.12	0.12	0.12	0.13	0.13	0.68	0.68	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.09	0.09	0.06	0.43	0.05	0.33	0.06
s, saturation flow rate [veh/h]	1781	1870	1528	1781	1696	3560	1523	3560	1589
c, Capacity [veh/h]	209	219	179	224	213	2402	1028	2402	1072
d1, Uniform Delay [s]	64.54	63.28	68.19	67.42	65.41	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	0.24	6.32	4.66	1.92	1.28	0.13	0.70	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.12	0.75	0.74	0.52	0.63	0.07	0.48	0.08
d, Delay for Lane Group [s/veh]	65.27	63.52	74.51	72.08	67.34	1.28	0.13	0.70	0.15
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.26	0.97	5.68	6.88	4.37	0.43	0.04	0.23	0.04
50th-Percentile Queue Length [ft/ln]	56.58	24.35	142.08	171.91	109.35	10.67	0.90	5.85	1.12
95th-Percentile Queue Length [veh/ln]	4.07	1.75	9.59	11.18	7.80	0.77	0.06	0.42	0.08
95th-Percentile Queue Length [ft/ln]	101.85	43.84	239.82	279.42	195.10	19.20	1.62	10.53	2.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.27	63.52	74.51	72.08	67.34	67.34	0.00	1.28	0.13	0.00	0.70	0.15
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	70.73			70.18			1.23			0.66		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	11.29											
Intersection LOS	B											
Intersection V/C	0.623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.069	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	280	1092	1092
d_b, Bicycle Delay [s]	54.86	59.55	16.52	16.49
l_b,int, Bicycle LOS Score for Intersection	1.923	2.013	2.870	2.592
Bicycle LOS	A	B	C	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	43.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	51	360	96	341	277	58	227	1389	540	134	1228	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	360	96	341	277	58	227	1389	540	134	1228	44
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	95	25	90	73	15	60	365	142	35	323	12
Total Analysis Volume [veh/h]	54	379	101	359	291	61	239	1461	568	141	1291	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			18			0			19		
v_di, Inbound Pedestrian Volume crossing m	0			19			0			18		
v_co, Outbound Pedestrian Volume crossing	16			6			6			15		
v_ci, Inbound Pedestrian Volume crossing mi	15			6			6			16		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	13			14			5			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.2	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.20	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.20	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	68	68	15	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.46	0.46	0.10	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.10	0.16	0.04	0.13	0.41	0.37	0.08	0.36	0.03
s, saturation flow rate [veh/h]	1852	1728	3459	1870	1458	1781	3560	1554	1781	3560	1534
c, Capacity [veh/h]	295	275	669	362	282	200	1627	710	184	1591	685
d1, Uniform Delay [s]	62.21	62.48	54.46	57.81	50.76	63.81	26.30	23.74	60.39	15.09	10.75
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.32	7.41	0.25	1.62	0.14	92.97	8.26	9.19	2.52	4.62	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.95	0.54	0.80	0.22	1.20	0.90	0.80	0.77	0.81	0.07
d, Delay for Lane Group [s/veh]	67.53	69.88	54.71	59.42	50.90	156.77	34.56	32.93	62.91	19.71	10.94
Lane Group LOS	E	E	D	E	D	F	C	C	E	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.73	10.45	6.18	10.75	1.96	12.50	21.47	15.00	4.94	9.97	0.47
50th-Percentile Queue Length [ft/ln]	268.19	261.15	154.45	268.82	49.01	312.52	536.80	374.98	123.52	249.15	11.66
95th-Percentile Queue Length [veh/ln]	16.10	15.75	10.25	16.13	3.53	19.64	29.07	21.35	8.59	15.14	0.84
95th-Percentile Queue Length [ft/ln]	402.47	393.66	256.36	403.27	88.22	490.91	726.79	533.77	214.66	378.58	20.98

Movement, Approach, & Intersection Results

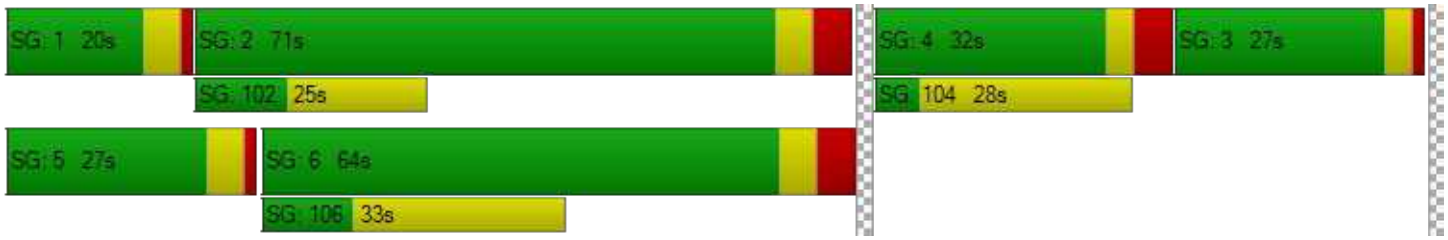
d_M, Delay for Movement [s/veh]	67.53	68.52	69.88	54.71	59.42	50.90	156.77	34.56	32.93	62.91	19.71	10.94
Movement LOS	E	E	E	D	E	D	F	C	C	E	B	B
d_A, Approach Delay [s/veh]	68.68			56.31			47.03			23.56		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	43.72											
Intersection LOS	D											
Intersection V/C	0.825											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.324	2.768	0.000	3.057
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.12	52.46	29.60	25.30
l_b,int, Bicycle LOS Score for Intersection	2.000	2.733	3.431	2.779
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	11.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	57	13	47	36	30	112	70	1744	20	123	1478	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	13	47	36	30	112	70	1744	20	123	1478	35
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	3	12	9	8	29	18	458	5	32	388	9
Total Analysis Volume [veh/h]	60	14	49	38	31	118	73	1830	21	129	1551	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			4			5		
v_di, Inbound Pedestrian Volume crossing m	5			4			4			6		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			16			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	36	36	36	36	36	36	29	95	95	29	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	26	26	26	10	111	111	14	115	115
g / C, Green / Cycle	0.16	0.16	0.16	0.06	0.69	0.69	0.08	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.12	0.05	0.08	0.04	0.34	0.34	0.07	0.29	0.29
s, saturation flow rate [veh/h]	1025	1280	1535	1781	3560	1857	1781	3560	1844
c, Capacity [veh/h]	198	241	247	107	2463	1284	151	2549	1320
d1, Uniform Delay [s]	67.01	59.12	60.88	72.09	2.22	2.22	70.02	1.11	1.11
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.16	0.65	1.44	7.37	0.71	1.36	12.83	0.49	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.29	0.48	0.68	0.49	0.49	0.86	0.41	0.41
d, Delay for Lane Group [s/veh]	70.17	59.77	62.32	79.46	2.93	3.59	82.85	1.60	2.06
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.11	2.60	4.57	3.10	2.01	2.33	5.59	0.99	1.20
50th-Percentile Queue Length [ft/ln]	127.67	64.88	114.35	77.42	50.23	58.31	139.74	24.86	30.01
95th-Percentile Queue Length [veh/ln]	8.81	4.67	8.08	5.57	3.62	4.20	9.47	1.79	2.16
95th-Percentile Queue Length [ft/ln]	220.32	116.79	202.03	139.36	90.42	104.95	236.67	44.75	54.01

Movement, Approach, & Intersection Results

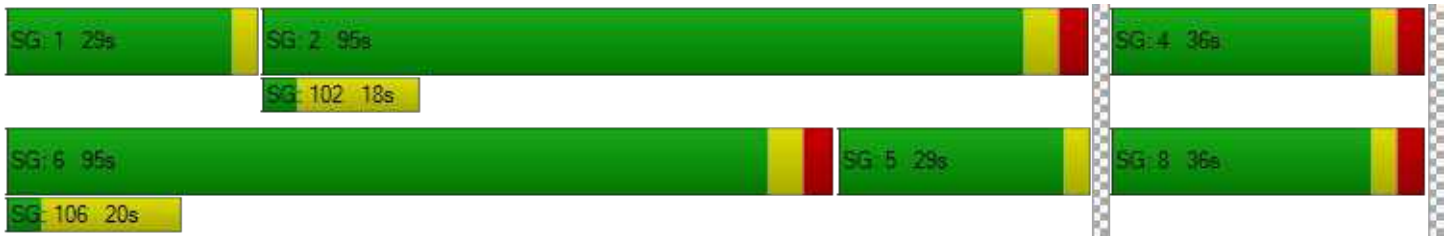
d_M, Delay for Movement [s/veh]	70.17	70.17	70.17	59.77	59.77	62.32	79.46	3.15	3.59	82.85	1.75	2.06
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	70.17			61.38			6.05			7.85		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	11.45											
Intersection LOS	B											
Intersection V/C	0.570											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.851	2.026	0.000	0.000
Crosswalk LOS	A	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	1099	1099
d_b, Bicycle Delay [s]	53.05	53.24	16.29	16.25
l_b,int, Bicycle LOS Score for Intersection	1.763	1.868	2.618	2.504
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	249	0	183	0	1	3	270	1710	1	2	1382	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	249	0	183	0	1	3	270	1710	1	2	1382	120
Peak Hour Factor	0.9520	0.9900	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	0	48	0	0	1	71	449	0	1	363	32
Total Analysis Volume [veh/h]	262	0	192	0	1	3	284	1796	1	2	1452	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			7			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	5	0	0	10	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	41	41	0	0	41	0	55	85	0	34	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	36	36	36	36	28	113	113	0	86	86
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.17	0.71	0.71	0.00	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.19	0.12	0.00	0.00	0.16	0.33	0.33	0.00	0.29	0.30
s, saturation flow rate [veh/h]	1412	1592	1191	1651	1781	3560	1869	1781	3560	1783
c, Capacity [veh/h]	344	361	172	375	307	2519	1322	4	1913	958
d1, Uniform Delay [s]	61.07	54.36	0.00	47.92	60.57	1.48	1.48	79.64	13.62	13.65
k, delay calibration	0.17	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.51	1.21	0.00	0.01	11.53	0.63	1.19	61.56	1.14	2.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.53	0.00	0.01	0.92	0.47	0.47	0.46	0.55	0.55
d, Delay for Lane Group [s/veh]	66.59	55.57	0.00	47.93	72.11	2.11	2.67	141.20	14.75	15.94
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.86	6.99	0.00	0.13	11.94	1.47	1.75	0.16	7.63	8.03
50th-Percentile Queue Length [ft/ln]	271.61	174.69	0.00	3.18	298.52	36.66	43.68	3.91	190.83	200.82
95th-Percentile Queue Length [veh/ln]	16.27	11.32	0.00	0.23	17.61	2.64	3.15	0.28	12.16	12.68
95th-Percentile Queue Length [ft/ln]	406.76	283.07	0.00	5.73	440.19	65.99	78.63	7.04	304.10	317.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.59	55.57	55.57	0.00	47.93	47.93	72.11	2.30	2.67	141.20	15.08	15.94
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	61.93			47.93			11.83			15.31		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	18.72											
Intersection LOS	B											
Intersection V/C	0.684											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.971	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	437	974	711
d_b, Bicycle Delay [s]	48.88	48.83	21.14	33.29
l_b,int, Bicycle LOS Score for Intersection	2.309	1.566	2.704	2.429
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	26	0	35	1	1	1	213	2031	2	25	1503	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	0	35	1	1	1	213	2031	2	25	1503	39
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	9	0	0	0	56	536	1	7	397	10
Total Analysis Volume [veh/h]	27	0	37	1	1	1	225	2145	2	26	1587	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			17			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	40	0	0	40	0	35	105	0	15	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	22	132	132	3	112	112
g / C, Green / Cycle	0.08	0.08	0.08	0.14	0.82	0.82	0.02	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.00	0.13	0.40	0.40	0.01	0.30	0.30
s, saturation flow rate [veh/h]	1515	1589	1586	1781	3560	1869	1781	3560	1843
c, Capacity [veh/h]	173	134	164	247	2925	1535	34	2499	1293
d1, Uniform Delay [s]	68.10	68.66	67.17	64.26	0.00	0.00	77.62	1.69	1.69
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	1.10	0.04	12.40	0.57	1.08	29.20	0.54	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.28	0.02	0.91	0.48	0.48	0.77	0.43	0.43
d, Delay for Lane Group [s/veh]	68.52	69.76	67.22	76.66	0.57	1.08	106.82	2.23	2.74
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.06	1.48	0.12	9.53	0.23	0.46	1.34	1.43	1.66
50th-Percentile Queue Length [ft/ln]	26.58	37.05	2.94	238.32	5.79	11.55	33.43	35.70	41.56
95th-Percentile Queue Length [veh/ln]	1.91	2.67	0.21	14.60	0.42	0.83	2.41	2.57	2.99
95th-Percentile Queue Length [ft/ln]	47.84	66.70	5.30	364.90	10.42	20.80	60.18	64.26	74.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.52	68.52	69.76	67.22	67.22	67.22	76.66	0.75	1.08	106.82	2.40	2.74
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.23			67.22			7.95			4.05		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	A											
Intersection V/C	0.481											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.059	1.751	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	412	412	1225	975
d_b, Bicycle Delay [s]	50.41	50.41	12.12	21.03
l_b,int, Bicycle LOS Score for Intersection	1.665	1.565	2.864	2.469
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.690

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	326	330	252	360	350	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.90	0.50	2.30	0.00	0.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	326	330	252	360	350	90
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	95	72	103	100	26
Total Analysis Volume [veh/h]	374	378	289	413	401	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	15		0		16	
v_ci, Inbound Pedestrian Volume crossing mi	16		0		15	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		15		8	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	49	49	49	49	49	49
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	14	14	10	27	13	13
g / C, Green / Cycle	0.28	0.28	0.20	0.57	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.20	0.25	0.16	0.22	0.22	0.07
s, saturation flow rate [veh/h]	1861	1505	1802	1865	1810	1557
c, Capacity [veh/h]	529	428	355	1055	482	414
d1, Uniform Delay [s]	15.60	16.31	18.69	5.90	16.83	14.00
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.66	2.45	1.75	0.09	1.46	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.88	0.81	0.39	0.83	0.25
d, Delay for Lane Group [s/veh]	16.26	18.76	20.44	5.99	18.29	14.11
Lane Group LOS	B	B	C	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.26	3.64	2.98	1.73	3.81	0.78
50th-Percentile Queue Length [ft/ln]	81.59	90.94	74.61	43.13	95.17	19.62
95th-Percentile Queue Length [veh/ln]	5.87	6.55	5.37	3.11	6.85	1.41
95th-Percentile Queue Length [ft/ln]	146.86	163.69	134.30	77.63	171.30	35.31

Movement, Approach, & Intersection Results

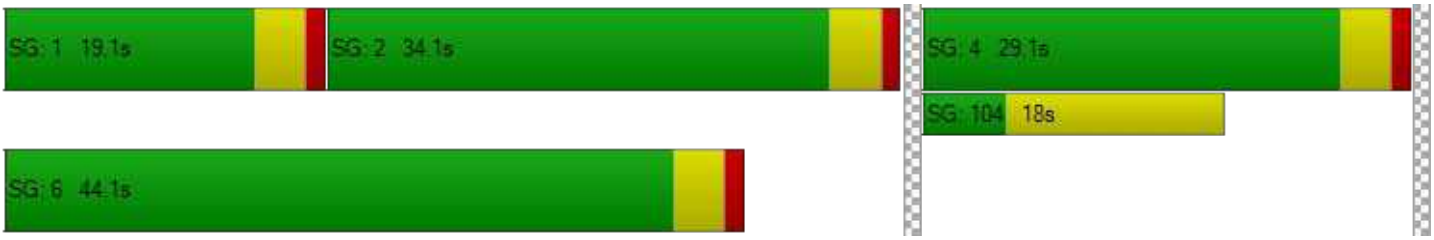
d_M, Delay for Movement [s/veh]	16.26	18.76	20.44	5.99	18.29	14.11
Movement LOS	B	B	C	A	B	B
d_A, Approach Delay [s/veh]	17.51		11.94		17.44	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	15.50					
Intersection LOS	B					
Intersection V/C	0.690					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	16.09	5.27
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.228	2.245
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1237	1649	1031
d_b, Bicycle Delay [s]	3.55	0.75	5.72
l_b,int, Bicycle LOS Score for Intersection	2.800	2.718	1.560
Bicycle LOS	C	B	A

Sequence

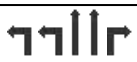
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Sand Hill Rd/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	339	603	144	327	981	158	291	814	252	146	727	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	603	144	327	981	158	291	814	252	146	727	166
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	159	38	86	258	42	76	214	66	38	191	44
Total Analysis Volume [veh/h]	356	634	151	344	1032	166	306	856	265	154	764	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			6			6			0		
v_di, Inbound Pedestrian Volume crossing m	0			6			6			1		
v_co, Outbound Pedestrian Volume crossing	2			1			3			2		
v_ci, Inbound Pedestrian Volume crossing mi	3			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			9			33			20		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	8	8	4	8	8	8	8	8	8	8	8
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	20	44	44	20	44	44	20	40	40	16	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.6	3.6	2.0	3.6	3.6	2.1	3.6	3.6	2.1	3.6	3.6
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.60	5.60	4.00	5.60	5.60	4.10	5.60	5.60	4.10	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.60	3.60	2.00	3.60	3.60	2.10	3.60	3.60	2.10	3.60	3.60
g_i, Effective Green Time [s]	14	45	45	14	45	45	13	32	32	10	29	29
g / C, Green / Cycle	0.12	0.38	0.38	0.12	0.37	0.37	0.11	0.27	0.27	0.08	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.10	0.10	0.29	0.11	0.09	0.24	0.18	0.04	0.21	0.11
s, saturation flow rate [veh/h]	3459	3560	1538	3459	3560	1558	3459	3560	1506	3459	3560	1539
c, Capacity [veh/h]	416	1339	578	406	1329	582	369	945	400	278	851	368
d1, Uniform Delay [s]	51.83	28.45	25.84	51.96	33.24	26.35	52.60	42.68	38.91	53.19	44.30	39.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.14	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	1.20	1.10	4.92	4.51	1.23	4.80	3.64	2.38	1.73	3.71	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.47	0.26	0.85	0.78	0.29	0.83	0.91	0.66	0.55	0.90	0.48
d, Delay for Lane Group [s/veh]	56.94	29.66	26.94	56.88	37.74	27.59	57.40	46.32	41.28	54.92	48.01	40.06
Lane Group LOS	E	C	C	E	D	C	E	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.50	7.04	3.13	5.31	13.74	3.49	4.73	12.53	7.07	2.29	11.27	4.48
50th-Percentile Queue Length [ft/ln]	137.58	176.02	78.13	132.71	343.61	87.33	118.19	313.21	176.63	57.25	281.84	111.96
95th-Percentile Queue Length [veh/ln]	9.35	11.39	5.63	9.09	19.82	6.29	8.29	18.33	11.42	4.12	16.78	7.95
95th-Percentile Queue Length [ft/ln]	233.76	284.81	140.64	227.18	495.61	157.19	207.33	458.33	285.61	103.05	419.50	198.73

Movement, Approach, & Intersection Results

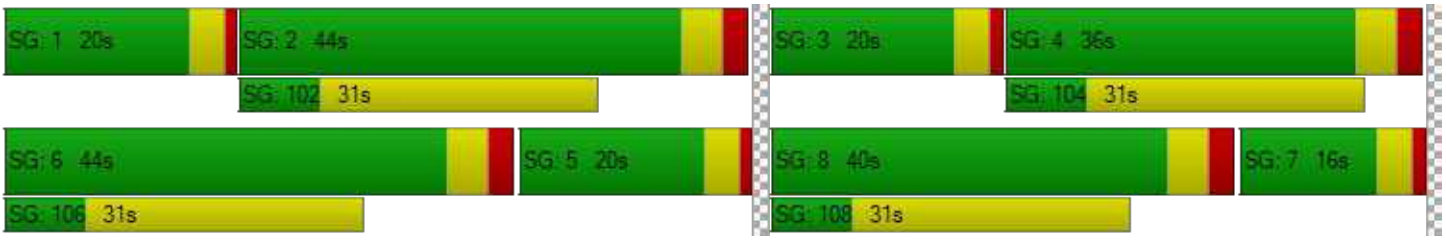
d_M, Delay for Movement [s/veh]	56.94	29.66	26.94	56.88	37.74	27.59	57.40	46.32	41.28	54.92	48.01	40.06
Movement LOS	E	C	C	E	D	C	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	37.81			40.92			47.76			47.71		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.54											
Intersection LOS	D											
Intersection V/C	0.759											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.55	49.55	49.55	49.55
l_p,int, Pedestrian LOS Score for Intersectio	3.039	3.108	3.044	3.009
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	573	506
d_b, Bicycle Delay [s]	28.18	27.91	31.08	33.83
l_b,int, Bicycle LOS Score for Intersection	2.501	2.832	2.737	2.461
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	47.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.012

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	148	17	242	0	6	23	6	0	2	190	338
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	148	17	242	0	6	23	6	0	2	190	338
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	5	65	0	2	6	2	0	1	51	91
Total Analysis Volume [veh/h]	0	159	18	260	0	6	25	6	0	2	204	363
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	544	408	569
Degree of Utilization, x	0.80	0.09	1.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.75	0.30	15.04
95th-Percentile Queue Length [ft]	193.63	7.42	376.09
Approach Delay [s/veh]	31.27	12.69	66.24
Approach LOS	D	B	F
Intersection Delay [s/veh]	47.94		
Intersection LOS	E		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	132	297	8	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	297	8	0	0	0	0	0
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	80	2	0	0	0	0	0
Total Analysis Volume [veh/h]	142	319	9	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	525	406
Degree of Utilization, x	0.90	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	10.30	0.00
95th-Percentile Queue Length [ft]	257.52	0.00
Approach Delay [s/veh]	44.06	0.00
Approach LOS	E	A
Intersection Delay [s/veh]	47.94	
Intersection LOS	E	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	56.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	60	413	325	43	438	67	220	19	45	53	30	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	413	325	43	438	67	220	19	45	53	30	58
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	120	94	13	127	19	64	6	13	15	9	17
Total Analysis Volume [veh/h]	70	480	378	50	509	78	256	22	52	62	35	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			5			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	0			6			0			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	11			7			1			8		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	30	36	30	24	24	24
g / C, Green / Cycle	0.53	0.43	0.53	0.43	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.50	0.06	0.32	0.31	0.05	0.06
s, saturation flow rate [veh/h]	958	1710	783	1816	1081	1326	1642
c, Capacity [veh/h]	436	743	290	776	462	116	561
d1, Uniform Delay [s]	10.80	19.53	14.96	16.74	24.07	15.93	15.96
k, delay calibration	0.23	0.50	0.11	0.33	0.23	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	84.65	0.28	4.51	4.39	3.75	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	1.16	0.17	0.76	0.71	0.53	0.18
d, Delay for Lane Group [s/veh]	11.16	104.18	15.24	21.25	28.46	19.67	16.11
Lane Group LOS	B	F	B	C	C	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.48	27.66	0.33	7.82	5.49	0.78	1.11
50th-Percentile Queue Length [ft/ln]	11.97	691.40	8.23	195.52	137.34	19.48	27.71
95th-Percentile Queue Length [veh/ln]	0.86	40.06	0.59	12.41	9.34	1.40	2.00
95th-Percentile Queue Length [ft/ln]	21.54	1001.57	14.82	310.18	233.44	35.06	49.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.16	104.18	104.18	15.24	21.25	21.25	28.46	28.46	28.46	19.67	16.11	16.11
Movement LOS	B	F	F	B	C	C	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	97.16			20.78			28.46			17.46		
Approach LOS	F			C			C			B		
d_I, Intersection Delay [s/veh]	56.17											
Intersection LOS	E											
Intersection V/C	0.873											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	-4.0	0.0	-5.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	38.68	0.00	39.75
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.499	0.000	2.081
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	868	868	868	868
d_b, Bicycle Delay [s]	11.14	11.11	11.08	11.12
l_b,int, Bicycle LOS Score for Intersection	3.091	2.611	2.104	1.830
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	418	771	425	632	651	139
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	418	771	425	632	651	139
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	197	108	161	166	35
Total Analysis Volume [veh/h]	427	787	434	645	664	142
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	29		41		20	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	10	7	10	8	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	38	48	44	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	35	35	35	53	92	28	28
g / C, Green / Cycle	0.27	0.27	0.27	0.41	0.71	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.22	0.24	0.41	0.19	0.09
s, saturation flow rate [veh/h]	1781	1862	1870	1781	1566	3560	1538
c, Capacity [veh/h]	482	504	506	728	1113	769	332
d1, Uniform Delay [s]	44.38	44.35	44.34	30.04	9.14	49.13	43.89
k, delay calibration	0.20	0.20	0.20	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.28	5.91	5.88	3.58	2.21	3.05	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.81	0.81	0.60	0.58	0.86	0.43
d, Delay for Lane Group [s/veh]	50.66	50.26	50.22	33.62	11.35	52.18	44.76
Lane Group LOS	D	D	D	C	B	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	12.67	13.16	13.20	11.31	8.87	10.71	4.05
50th-Percentile Queue Length [ft/ln]	316.84	328.96	330.11	282.72	221.87	267.67	101.17
95th-Percentile Queue Length [veh/ln]	18.51	19.11	19.16	16.82	13.76	16.07	7.28
95th-Percentile Queue Length [ft/ln]	462.80	477.68	479.09	420.60	344.01	401.83	182.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.64	50.24	33.62	11.35	52.18	44.76
Movement LOS	D	D	C	B	D	D
d_A, Approach Delay [s/veh]	50.38		20.30		50.87	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	40.03					
Intersection LOS	D					
Intersection V/C	0.763					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	521	601
d_b, Bicycle Delay [s]	29.28	36.27	32.11
l_b,int, Bicycle LOS Score for Intersection	2.561	1.560	2.225
Bicycle LOS	B	A	B

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road/101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.924

Intersection Setup

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	2164	0	0	1545	605	598
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2164	0	0	1545	605	598
Peak Hour Factor	0.9550	1.0000	1.0000	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	566	0	0	404	158	157
Total Analysis Volume [veh/h]	2266	0	0	1618	634	626
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	100	0	0	100	100	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	70	0	0	70	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	Yes	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	68	68	28	28
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.64	0.45	0.18	0.22
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2401	2401	971	790
d1, Uniform Delay [s]	14.63	9.75	31.73	33.33
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.24	1.53	3.41	8.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.67	0.65	0.79
d, Delay for Lane Group [s/veh]	23.86	11.28	35.14	41.33
Lane Group LOS	C	B	D	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	22.29	9.65	7.11	7.77
50th-Percentile Queue Length [ft/ln]	557.23	241.29	177.68	194.31
95th-Percentile Queue Length [veh/ln]	30.03	14.75	11.48	12.34
95th-Percentile Queue Length [ft/ln]	750.79	368.66	286.98	308.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.86	0.00	0.00	11.28	35.14	41.33
Movement LOS	C			B	D	D
d_A, Approach Delay [s/veh]	23.86		11.28		38.22	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	23.42					
Intersection LOS	C					
Intersection V/C	0.924					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	41.46	39.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.237	2.443
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	515
d_b, Bicycle Delay [s]	6.02	6.04	27.58
l_b,int, Bicycle LOS Score for Intersection	3.429	2.894	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	35.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.009

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	399	192	21	20	197	337	11	194	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	399	192	21	20	197	337	11	194	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	108	52	6	5	53	91	3	53	2
Total Analysis Volume [veh/h]	10	193	16	433	208	23	22	214	366	12	211	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	394	419	433	462	449	494	429
Degree of Utilization, x	0.03	0.50	1.01	0.50	0.53	0.74	0.54

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	2.71	13.00	2.75	2.99	6.18	3.09
95th-Percentile Queue Length [ft]	1.95	67.70	324.94	68.72	74.75	154.46	77.23
Approach Delay [s/veh]	19.21		55.20		24.57		20.71
Approach LOS	C		F		C		C
Intersection Delay [s/veh]	35.22						
Intersection LOS	E						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1296	364	0	1068	782	0	0	0	782	0	357
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1296	364	0	1068	782	0	0	0	782	0	357
Peak Hour Factor	1.0000	0.9520	0.9520	1.0000	0.9520	0.9520	1.0000	1.0000	1.0000	0.9520	1.0000	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	340	96	0	280	205	0	0	0	205	0	94
Total Analysis Volume [veh/h]	0	1361	382	0	1122	821	0	0	0	821	0	375
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	112	0	0	112	0	0	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	108	108	108		29	29
g / C, Green / Cycle	0.74	0.74	0.74		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.27	0.22	0.53		0.24	0.13
s, saturation flow rate [veh/h]	5094	5094	1550		3459	2813
c, Capacity [veh/h]	3793	3793	1154		692	563
d1, Uniform Delay [s]	6.45	6.06	9.77		57.92	53.45
k, delay calibration	0.50	0.50	0.50		0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.27	0.20	3.74		87.97	1.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.30	0.71		1.19	0.67
d, Delay for Lane Group [s/veh]	6.71	6.26	13.51		145.89	54.81
Lane Group LOS	A	A	B		F	D
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.67	3.62	13.75		21.15	6.45
50th-Percentile Queue Length [ft/ln]	116.74	90.39	343.78		528.65	161.21
95th-Percentile Queue Length [veh/ln]	8.21	6.51	19.83		31.30	10.61
95th-Percentile Queue Length [ft/ln]	205.33	162.70	495.81		782.40	265.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.71	0.00	0.00	6.26	13.51	0.00	0.00	0.00	145.89	0.00	54.81
Movement LOS		A			A	B				F		D
d_A, Approach Delay [s/veh]	5.30			9.32			0.00			117.33		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	36.81											
Intersection LOS	D											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.74	0.00	63.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.016	0.000	1.447	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1491	1491	0	400
d_b, Bicycle Delay [s]	4.70	4.72	72.46	46.36
l_b,int, Bicycle LOS Score for Intersection	2.308	2.628	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	87.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1408	729	0	1327	852	0	0	0	422	0	849
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1408	729	0	1327	852	0	0	0	422	0	849
Peak Hour Factor	1.0000	0.9330	0.9330	1.0000	0.9330	0.9330	1.0000	1.0000	1.0000	0.9330	1.0000	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	377	195	0	356	228	0	0	0	113	0	227
Total Analysis Volume [veh/h]	0	1509	781	0	1422	913	0	0	0	452	0	910
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	2.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	95	0	0	95	0	0	0	0	25	0	25
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	91	91	116		21	46
g / C, Green / Cycle	0.63	0.63	0.80		0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.50	0.50	0.47		0.13	0.55
s, saturation flow rate [veh/h]	3003	1556	3003		3459	1658
c, Capacity [veh/h]	1886	977	2401		502	525
d1, Uniform Delay [s]	20.14	19.69	5.52		60.91	49.51
k, delay calibration	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	3.67	6.81	1.08		6.19	337.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.80	0.59		0.90	1.73
d, Delay for Lane Group [s/veh]	23.81	26.51	6.60		67.10	387.25
Lane Group LOS	C	C	A		E	F
Critical Lane Group	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	12.87	20.42	4.90		8.63	34.09
50th-Percentile Queue Length [ft/ln]	321.80	510.58	122.48		215.79	852.30
95th-Percentile Queue Length [veh/ln]	18.76	27.83	8.53		13.45	55.79
95th-Percentile Queue Length [ft/ln]	468.90	695.87	213.23		336.25	1394.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.81	26.51	0.00	6.60	0.00	0.00	0.00	0.00	67.10	0.00	387.25
Movement LOS		C	C		A					E		F
d_A, Approach Delay [s/veh]	24.73			4.13			0.00			281.00		
Approach LOS	C			A			A			F		
d_I, Intersection Delay [s/veh]	87.75											
Intersection LOS	F											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	63.75	63.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.153	1.447	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1601	0	290
d_b, Bicycle Delay [s]	10.05	2.90	72.47	52.99
l_b,int, Bicycle LOS Score for Intersection	2.819	2.342	4.132	1.560
Bicycle LOS	C	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	15	272	82	133	172	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	272	82	133	172	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	74	22	36	47	2
Total Analysis Volume [veh/h]	16	296	89	145	187	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	617	675	773	664
Degree of Utilization, x	0.03	0.44	0.30	0.29

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	2.23	1.28	1.22
95th-Percentile Queue Length [ft]	1.99	55.87	31.94	30.55
Approach Delay [s/veh]	11.95		9.66	10.66
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.89			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	24.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.266

Intersection Setup

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	603	29	5	418	67	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	603	29	5	418	67	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	7	1	105	17	5
Total Analysis Volume [veh/h]	603	29	5	418	67	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.27	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.79	0.00	24.81	17.85
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	1.24	1.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.21	0.21	31.06	31.06
d_A, Approach Delay [s/veh]	0.00		0.10		23.34	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.78					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.042

Intersection Setup

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	603	67	0	419	0	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	603	67	0	419	0	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	17	0	105	0	5
Total Analysis Volume [veh/h]	603	67	0	419	0	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.91	0.00	19.75	12.87
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	3.27	3.27
d_A, Approach Delay [s/veh]	0.00		0.00		12.87	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.23					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	All-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	73	192	32	8	175	9	58	108	9	3	282	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	192	32	8	175	9	58	108	9	3	282	14
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	52	9	2	48	2	16	29	2	1	77	4
Total Analysis Volume [veh/h]	79	209	35	9	190	10	63	117	10	3	307	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	602	579	568	602
Degree of Utilization, x	0.54	0.36	0.33	0.54

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.19	1.64	1.46	3.22
95th-Percentile Queue Length [ft]	79.66	40.97	36.53	80.55
Approach Delay [s/veh]	15.70	12.70	12.48	15.78
Approach LOS	C	B	B	C
Intersection Delay [s/veh]	14.54			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	232	199	95	181	166	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	199	95	181	166	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	55	26	50	46	13
Total Analysis Volume [veh/h]	258	221	106	201	184	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	741	666	611
Degree of Utilization, x	0.65	0.46	0.39

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.80	2.43	1.82
95th-Percentile Queue Length [ft]	119.95	60.73	45.41
Approach Delay [s/veh]	16.34	12.92	12.54
Approach LOS	C	B	B
Intersection Delay [s/veh]	14.43		
Intersection LOS	B		

Intersection Level Of Service Report
Intersection 292: Ravesnwood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	64.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.210

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	9	589	33	19	437	7	19	5	37	5	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	589	33	19	437	7	19	5	37	5	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	158	9	5	117	2	5	1	10	1	0	5
Total Analysis Volume [veh/h]	10	633	35	20	470	8	20	5	40	5	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.82	0.03	0.21	0.60	0.01	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	45.11	35.26	33.96	63.96	30.71	29.54	7.28	0.00	0.00	7.31	0.00	0.00
Movement LOS	E	E	D	F	D	D	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	11.62	11.62	11.62	8.39	8.39	8.39	0.04	0.04	0.04	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	290.42	290.42	290.42	209.82	209.82	209.82	0.99	0.99	0.99	0.25	0.25	0.25
d_A, Approach Delay [s/veh]	35.34			32.03			2.24			1.52		
Approach LOS	E			D			A			A		
d_I, Intersection Delay [s/veh]	31.69											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	55	2	38	5	0	2	12	312	4	3	276	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	2	38	5	0	2	12	312	4	3	276	24
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	1	12	2	0	1	4	95	1	1	84	7
Total Analysis Volume [veh/h]	67	2	46	6	0	2	15	380	5	4	337	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	641	600	758	760
Degree of Utilization, x	0.18	0.01	0.53	0.49

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.65	0.04	3.13	2.70
95th-Percentile Queue Length [ft]	16.26	1.01	78.31	67.52
Approach Delay [s/veh]	9.85	9.08	12.93	12.16
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	12.18			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.038

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	13	19	423	36	16	333
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	19	423	36	16	333
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	5	106	9	4	83
Total Analysis Volume [veh/h]	13	19	423	36	16	333
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.03	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	16.00	11.41	0.00	0.00	8.28	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	5.49	5.49	0.00	0.00	0.67	0.67
d_A, Approach Delay [s/veh]	13.27		0.00		0.38	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.66					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	2	2	423	2	2	333
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	423	2	2	333
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	106	1	1	83
Total Analysis Volume [veh/h]	2	2	423	2	2	333
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	673	841	825
Degree of Utilization, x	0.01	0.50	0.41

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.02	2.90	1.99
95th-Percentile Queue Length [ft]	0.45	72.48	49.66
Approach Delay [s/veh]	8.38	11.56	10.31
Approach LOS	A	B	B
Intersection Delay [s/veh]	11.00		
Intersection LOS	B		

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_PM_2023.11.17.vistro
Report File: P:\...\BPPM with Imp.pdf

Scenario 21 Near-Term (2027) Plus Project with Improvement PM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.586	14.1	B
254	Laurel Street and Glenwood Ave	Signalized	HCM 7th Edition	NWB Thru	0.280	11.8	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	1273	9	46	829	14	37	2	7	31	1	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1273	9	46	829	14	37	2	7	31	1	44
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	339	2	12	221	4	10	1	2	8	0	12
Total Analysis Volume [veh/h]	4	1357	10	49	884	15	39	2	7	33	1	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	0	37	37	2	39	4	4	4	5	12
g / C, Green / Cycle	0.00	0.56	0.56	0.04	0.59	0.06	0.06	0.06	0.07	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.37	0.37	0.03	0.48	0.01	0.01	0.00	0.02	0.03
s, saturation flow rate [veh/h]	1781	1870	1864	1781	1863	1781	1789	1431	1783	1560
c, Capacity [veh/h]	8	1049	1046	65	1106	106	107	85	129	274
d1, Uniform Delay [s]	33.11	10.12	10.12	31.81	10.65	29.80	29.80	29.59	29.22	23.28
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	45.16	1.47	1.48	16.00	3.16	0.87	0.86	0.41	1.07	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.65	0.65	0.75	0.81	0.19	0.19	0.08	0.26	0.17
d, Delay for Lane Group [s/veh]	78.27	11.59	11.61	47.80	13.80	30.68	30.67	30.00	30.29	23.58
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	6.32	6.31	1.05	9.42	0.34	0.35	0.12	0.54	0.63
50th-Percentile Queue Length [ft/ln]	3.99	157.91	157.72	26.31	235.38	8.62	8.63	2.95	13.52	15.77
95th-Percentile Queue Length [veh/ln]	0.29	10.44	10.43	1.89	14.45	0.62	0.62	0.21	0.97	1.14
95th-Percentile Queue Length [ft/ln]	7.19	260.95	260.70	47.36	361.19	15.52	15.53	5.31	24.33	28.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.27	11.60	11.61	47.80	13.80	13.80	30.67	30.67	30.00	30.29	30.29	23.58
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.79			15.56			30.57			26.40		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.10											
Intersection LOS	B											
Intersection V/C	0.586											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	23.18	23.18	23.18	23.18
l_p,int, Pedestrian LOS Score for Intersectio	2.581	2.760	2.120	1.962
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	601	601	902	902
d_b, Bicycle Delay [s]	16.31	16.35	10.04	10.04
l_b,int, Bicycle LOS Score for Intersection	2.691	3.124	1.639	1.693
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	Signalized	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.280

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	27	159	43	11	188	9	39	125	10	3	96	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	159	43	11	188	9	39	125	10	3	96	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	43	12	3	51	2	11	34	3	1	26	3
Total Analysis Volume [veh/h]	29	173	47	12	204	10	42	136	11	3	104	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	27	0	0	27	0	0	25	0	0	25	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	31	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	25	25
g / C, Green / Cycle	0.45	0.45	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.16	0.14	0.12	0.07
s, saturation flow rate [veh/h]	1572	1652	1553	1649
c, Capacity [veh/h]	775	807	720	749
d1, Uniform Delay [s]	10.71	10.50	11.51	11.00
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	0.87	0.89	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.28	0.26	0.16
d, Delay for Lane Group [s/veh]	11.81	11.36	12.40	11.45
Lane Group LOS	B	B	B	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.08	1.84	1.64	0.97
50th-Percentile Queue Length [ft/ln]	52.07	45.90	40.88	24.28
95th-Percentile Queue Length [veh/ln]	3.75	3.31	2.94	1.75
95th-Percentile Queue Length [ft/ln]	93.72	82.63	73.58	43.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.81	11.81	11.81	11.36	11.36	11.36	12.40	12.40	12.40	11.45	11.45	11.45
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	11.81			11.36			12.40			11.45		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	11.77											
Intersection LOS	B											
Intersection V/C	0.280											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersectio	2.002	1.901	1.884	1.880
Crosswalk LOS	B	A	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	900	833	833
d_b, Bicycle Delay [s]	9.08	9.08	10.21	10.21
l_b,int, Bicycle LOS Score for Intersection	1.970	1.933	1.871	1.756
Bicycle LOS	A	A	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Vistro File:
P:\...\Parkline_Vistro_AllScenarios_PM_2023.11.17.vistro
Report File: P:\...\CPPM with Imp.pdf

Scenario 22 Cumulative (2040) Plus Project with Improvements PM
11/27/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.562	15.2	B
115	Orange Ave/Santa Cruz Ave	Signalized	HCM 7th Edition	SWB Left	0.600	17.0	B
254	Laurel Street and Glenwood Ave	Signalized	HCM 7th Edition	NEB Thru	0.410	13.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	985	6	46	740	14	49	34	14	29	40	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	985	6	46	740	14	49	34	14	29	40	37
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	263	2	12	197	4	13	9	4	8	11	10
Total Analysis Volume [veh/h]	4	1050	6	49	789	15	52	36	15	31	43	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	62	62	62	62	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	0	32	32	2	34	5	5	5	6	12
g / C, Green / Cycle	0.00	0.51	0.51	0.04	0.54	0.08	0.08	0.08	0.09	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.28	0.28	0.03	0.43	0.02	0.02	0.01	0.04	0.02
s, saturation flow rate [veh/h]	1781	1870	1865	1781	1863	1781	1853	1459	1832	1561
c, Capacity [veh/h]	8	950	947	66	1007	137	142	112	163	308
d1, Uniform Delay [s]	30.89	10.49	10.50	29.65	11.55	27.17	27.15	26.76	26.90	20.49
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.71	1.09	1.10	15.17	3.16	1.33	1.23	0.54	1.98	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.56	0.56	0.74	0.80	0.32	0.31	0.13	0.45	0.13
d, Delay for Lane Group [s/veh]	75.60	11.59	11.59	44.82	14.71	28.50	28.39	27.29	28.88	20.67
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.15	4.58	4.58	0.98	8.34	0.67	0.68	0.23	1.10	0.46
50th-Percentile Queue Length [ft/ln]	3.85	114.59	114.41	24.51	208.42	16.86	17.04	5.69	27.41	11.56
95th-Percentile Queue Length [veh/ln]	0.28	8.09	8.08	1.76	13.07	1.21	1.23	0.41	1.97	0.83
95th-Percentile Queue Length [ft/ln]	6.94	202.37	202.12	44.11	326.80	30.35	30.68	10.25	49.33	20.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.60	11.59	11.59	44.82	14.71	14.71	28.48	28.39	27.29	28.88	28.88	20.67
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.83			16.44			28.27			26.05		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.23											
Intersection LOS	B											
Intersection V/C	0.562											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.01	21.01	21.01	21.01
l_p,int, Pedestrian LOS Score for Intersectio	2.495	2.702	2.124	1.975
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	644	967	967
d_b, Bicycle Delay [s]	14.28	14.32	8.29	8.29
l_b,int, Bicycle LOS Score for Intersection	2.434	2.967	1.730	1.746
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	399	192	21	20	197	337	11	194	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	399	192	21	20	197	337	11	194	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	108	52	6	5	53	91	3	53	2
Total Analysis Volume [veh/h]	10	193	16	433	208	23	22	214	366	12	211	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	31	0	0	31	0	0	21	0	0	21	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	25	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	6	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31	31	31	21	21	21
g / C, Green / Cycle	0.52	0.52	0.52	0.52	0.35	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.01	0.11	0.37	0.13	0.13	0.23	0.13
s, saturation flow rate [veh/h]	1149	1845	1173	1838	1824	1589	1819
c, Capacity [veh/h]	596	953	614	949	704	556	700
d1, Uniform Delay [s]	10.40	7.90	15.91	8.02	14.51	16.47	14.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.53	6.66	0.61	1.28	5.99	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.22	0.70	0.24	0.34	0.66	0.33
d, Delay for Lane Group [s/veh]	10.45	8.43	22.58	8.62	15.79	22.46	15.72
Lane Group LOS	B	A	C	A	B	C	B
Critical Lane Group	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.08	1.36	5.78	1.53	2.40	4.71	2.33
50th-Percentile Queue Length [ft/ln]	1.95	33.98	144.38	38.17	59.95	117.63	58.25
95th-Percentile Queue Length [veh/ln]	0.14	2.45	9.72	2.75	4.32	8.26	4.19
95th-Percentile Queue Length [ft/ln]	3.51	61.16	242.91	68.71	107.91	206.57	104.85

Movement, Approach, & Intersection Results

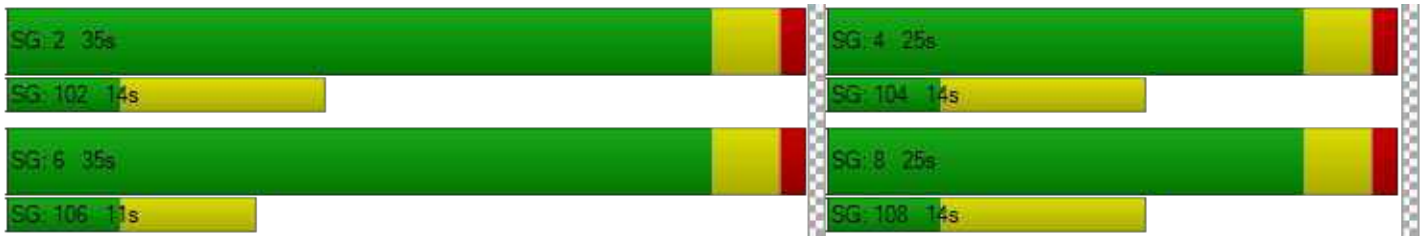
d_M, Delay for Movement [s/veh]	10.45	8.43	8.43	22.58	8.62	8.62	15.79	15.79	22.46	15.72	15.72	15.72
Movement LOS	B	A	A	C	A	A	B	B	C	B	B	B
d_A, Approach Delay [s/veh]	8.53			17.72			19.84			15.72		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	17.02											
Intersection LOS	B											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersectio	2.100	2.339	2.947	1.942
Crosswalk LOS	B	B	C	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	1033	700	700
d_b, Bicycle Delay [s]	7.01	7.01	12.68	12.68
l_b,int, Bicycle LOS Score for Intersection	1.921	2.655	2.553	1.939
Bicycle LOS	A	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.410

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	73	192	32	8	175	9	58	108	9	3	282	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	192	32	8	175	9	58	108	9	3	282	14
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	52	9	2	48	2	16	29	2	1	77	4
Total Analysis Volume [veh/h]	79	209	35	9	190	10	63	117	10	3	307	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	26	0	0	26	0	0	26	0	0	26	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	30	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	26
g / C, Green / Cycle	0.43	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.21	0.13	0.14	0.19
s, saturation flow rate [veh/h]	1503	1655	1390	1668
c, Capacity [veh/h]	726	780	682	783
d1, Uniform Delay [s]	11.99	11.01	10.87	11.96
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.97	0.84	1.02	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.27	0.28	0.41
d, Delay for Lane Group [s/veh]	13.96	11.86	11.89	13.58
Lane Group LOS	B	B	B	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.03	1.75	1.60	3.00
50th-Percentile Queue Length [ft/ln]	75.80	43.75	39.98	75.00
95th-Percentile Queue Length [veh/ln]	5.46	3.15	2.88	5.40
95th-Percentile Queue Length [ft/ln]	136.43	78.75	71.96	135.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.96	13.96	13.96	11.86	11.86	11.86	11.89	11.89	11.89	13.58	13.58	13.58
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	13.96			11.86			11.89			13.58		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.05											
Intersection LOS	B											
Intersection V/C	0.410											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersectio	2.073	1.910	1.972	2.067
Crosswalk LOS	B	A	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	867	867
d_b, Bicycle Delay [s]	9.63	9.63	9.63	9.63
l_b,int, Bicycle LOS Score for Intersection	2.093	1.904	1.873	2.096
Bicycle LOS	B	A	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix D
Internal Trip Capture Calculations

Table D-1
Local Area Characteristics Inputs for EPA MXD Model V4

Factor	Input Value	Source
Project Acearage[1]	38 acres	Project Plan
Number of intersections within or on the perimeter of the MXD	13	Project Plan
Is transit present within the site or across the street	Yes	Project Plan
Is the site a Central Business District or TOD	Yes	--
Employment within one mile of the MXD	45,568	http://onthemap.ces.census.gov/
Employment within a 30 min transit trip	199,670	http://onthemap.ces.census.gov/

Notes:
1. Project Acreage is approximately 63 acres. The MXD tool uses only the developed area as an input. Per the project description, 25 acres would be open space, therefore, it is assumed that 38 acres would be the developed area.

Table D-2
Optimal Blend of NCHRP 684 and EPA MXD Methods per APA PAS

	AM Peak Traffic	PM Peak Traffic	Average Daily Traffic
NCHRP 684	10.1%	36.5%	0.0%
EPA MXD	89.9%	63.5%	100.0%
Total	**100.0%**	**100.0%**	**100.0%**

Source: *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo, American Planning Association, May 2013.*

Table D-3
Trip Generation Estimates – 100% Office Scenario

Land Use	ITE Code[1]	Size		Daily Rate	Daily Trips	AM Peak Hour Rate	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour Rate	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Proposed Use													
General Office	710	1,094	ksf	10.84	11,855	1.52	1,462	200	1,662	1.44	268	1,307	1,575
Internal Capture % (NCHRP)							0%	0%			1%	0%	
Internal Capture Reduction (NCHRP)							(2)	0	(2)		(3)	(4)	(7)
Internal Capture (MXD)					(555)		(49)	(7)	(56)		(13)	(61)	(74)
Internal Capture[2]					*(555)*		*(44)*	*(6)*	*(50)*		*(10)*	*(40)*	*(50)*
General Office trips before active TDM measures:					**11,300**		**1,418**	**194**	**1,612**		**258**	**1,267**	**1,525**
Multifamily Housing (Mid-Rise)	221	431	du	4.54	1,957	0.37	37	122	159	0.39	102	66	168
Internal Capture % (NCHRP)							*0%*	*2%*			*4%*	*4%*	
Internal Capture Reduction (NCHRP)							*0*	*(2)*	*(2)*		*(4)*	*(3)*	*(7)*
Internal Capture (MXD)					*(92)*		*(1)*	*(4)*	*(5)*		*(5)*	*(3)*	*(8)*
Internal Capture[2]					*(92)*		*(1)*	*(4)*	*(5)*		*(5)*	*(3)*	*(8)*
Residential trips before active TDM measures:					**1,865**		**36**	**118**	**154**		**97**	**63**	**160**
Single-Family Attached Housing	215	19	du	7.20	137	0.48	2	7	9	0.57	6	5	11
Internal Capture % (NCHRP)							*0%*	*2%*			*4%*	*4%*	
Internal Capture Reduction (NCHRP)							*0*	*0*	*0*		*0*	*0*	*0*
Internal Capture (MXD)					*(6)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Internal Capture[2]					*(6)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Residential trips before active TDM measures:					**131**		**2**	**7**	**9**		**5**	**5**	**10**
Affordable Housing	223	100	du	4.81	481	0.50	15	35	50	0.46	27	19	46
Internal Capture % (NCHRP)							*0%*	*2%*			*4%*	*4%*	
Internal Capture Reduction (NCHRP)							*0*	*(1)*	*(1)*		*(1)*	*(1)*	*(2)*
Internal Capture (MXD)					*(23)*		*(1)*	*(1)*	*(2)*		*(1)*	*(1)*	*(2)*
Internal Capture[2]					*(23)*		*(1)*	*(1)*	*(2)*		*(1)*	*(1)*	*(2)*
Residential trips before active TDM measures:					**458**		**14**	**34**	**48**		**26**	**18**	**44**
Soccer Complex[3]	488	1	field	71.33	71	0.99	1	0	1	16.43	11	5	16
Internal Capture % (NCHRP)							*0%*	*0%*			*0%*	*0%*	
Internal Capture Reduction (NCHRP)							*0*	*0*	*0*		*0*	*0*	*0*
Internal Capture (MXD)					*(3)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Internal Capture[2]					*(3)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Public Park trips before active TDM measures:					**68**		**1**	**0**	**1**		**10**	**5**	**15**
Gross Project Trips (before any reductions)					**14,501**		**1,517**	**364**	**1,881**		**414**	**1,402**	**1,816**
Gross Project Trips After Internal Capture Reduction					**13,822**		**1,471**	**353**	**1,824**		**396**	**1,358**	**1,754**
Project Trips After TDM Reduction (25%)					**10,367**		**1,103**	**265**	**1,368**		**297**	**1,019**	**1,316**
Other Trip Adjustments													
Existing Uses (non P, S, T Buildings)[4]					(518)		(38)	(8)	(46)		(11)	(32)	(43)
Net Project Trips on Project Network					**9,849**		**1,065**	**257**	**1,322**		**286**	**987**	**1,273**

Notes:

ksf = 1,000 square feet; du = dwelling unit

[1] Daily, AM, and PM peak hour average rates published in *ITE Trip Generation Manual, 11th Edition, 2021* were used for each land use.

[2] Internal Capture developed using *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and *US EPA Mixed Use Trip Generation Model v.4, 2010* per the methodology described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo*, American Planning Association, 2020.

[3] ITE Trip Generation Manual, 11th Edition, 2021 provides trip rates per field for a soccer complex. The Proposed Project would include active recreational areas in the Ravenswood Avenue Parklet. It is assumed that the park would have play structures and open field areas for warm-ups or casual play. The number of soccer fields on the park was estimated based on the size of a standard soccer field.

[4] Existing use trip estimates are based on driveway counts conducted by Fehr & Peers in 2021. Of the 1,100 employees on-site, Buildings P, S, T had 700 employees. The trip generation for these buildings is proportioned based on employees.

Table D-4
Trip Generation Estimates – 100% R&D Scenario

Land Use	ITE Code[1]	Size		Daily Rate	Daily Trips	AM Peak Hour Rate	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour Rate	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Proposed Use													
Research and Development Center (R&D)	760	1,094	ksf	11.08	12,117	1.03	923	203	1,126	0.98	172	900	1,072
Internal Capture % (NCHRP)							*0%*	*0%*			*2%*	*0%*	
Internal Capture Reduction (NCHRP)							*(2)*	*0*	*(2)*		*(3)*	*(4)*	*(7)*
Internal Capture (MXD)					*(567)*		*(31)*	*(7)*	*(38)*		*(8)*	*(42)*	*(50)*
Internal Capture[2]					*(567)*		*(28)*	*(6)*	*(34)*		*(6)*	*(28)*	*(34)*
R&D trips before active TDM measures:					**11,550**		**895**	**197**	**1,092**		**166**	**872**	**1,038**
Multifamily Housing (Mid-Rise)	221	431	du	4.54	1,957	0.37	37	122	159	0.39	102	66	168
Internal Capture % (NCHRP)							*0%*	*2%*			*4%*	*4%*	
Internal Capture Reduction (NCHRP)							*0*	*(2)*	*(2)*		*(4)*	*(3)*	*(7)*
Internal Capture (MXD)					*(92)*		*(1)*	*(4)*	*(5)*		*(5)*	*(3)*	*(8)*
Internal Capture[2]					*(92)*		*(1)*	*(4)*	*(5)*		*(5)*	*(3)*	*(8)*
Residential trips before active TDM measures:					**1,865**		**36**	**118**	**154**		**97**	**63**	**160**
Single-Family Attached Housing	215	19	du	7.20	137	0.48	2	7	9	0.57	6	5	11
Internal Capture % (NCHRP)							*0%*	*2%*			*4%*	*4%*	
Internal Capture Reduction (NCHRP)							*0*	*0*	*0*		*0*	*0*	*0*
Internal Capture (MXD)					*(6)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Internal Capture[2]					*(6)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Residential trips before active TDM measures:					**131**		**2**	**7**	**9**		**5**	**5**	**10**
Affordable Housing	223	100	du	4.81	481	0.50	15	35	50	0.46	27	19	46
Internal Capture % (NCHRP)							*0%*	*2%*			*4%*	*4%*	
Internal Capture Reduction (NCHRP)							*0*	*(1)*	*(1)*		*(1)*	*(1)*	*(2)*
Internal Capture (MXD)					*(23)*		*(1)*	*(1)*	*(2)*		*(1)*	*(1)*	*(2)*
Internal Capture[2]					*(23)*		*(1)*	*(1)*	*(2)*		*(1)*	*(1)*	*(2)*
Residential trips before active TDM measures:					**458**		**14**	**34**	**48**		**26**	**18**	**44**
Soccer Complex[3]	488	1	field	71.33	71	0.99	1	0	1	16.43	11	5	16
Internal Capture % (NCHRP)							*0%*	*0%*			*0%*	*0%*	
Internal Capture Reduction (NCHRP)							*0*	*0*	*0*		*0*	*0*	*0*
Internal Capture (MXD)					*(3)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Internal Capture[2]					*(3)*		*0*	*0*	*0*		*(1)*	*0*	*(1)*
Public Park trips before active TDM measures:					**68**		**1**	**0**	**1**		**10**	**5**	**15**
Gross Project Trips (before any reductions)					**14,763**		**978**	**367**	**1,345**		**318**	**995**	**1,313**
Gross Project Trips After Internal Capture Reduction					**14,072**		**948**	**356**	**1,304**		**304**	**963**	**1,267**
Project Trips After TDM Reduction (25%)					**10,554**		**711**	**267**	**978**		**228**	**722**	**950**
Other Trip Adjustments													
Existing Uses (non P, S, T Buildings)[4]					(518)		(38)	(8)	(46)		(11)	(32)	(43)
Net Project Trips on Project Network					**10,036**		**673**	**259**	**932**		**217**	**690**	**907**

Notes:

ksf = 1,000 square feet; du = dwelling unit

[1] Daily, AM, and PM peak hour average rates published in *ITE Trip Generation Manual, 11th Edition, 2021* were used for each land use.

[2] Internal Capture developed using *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and *US EPA Mixed Use Trip Generation Model v.4, 2010* per the methodology described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo*, American Planning Association, 2020.

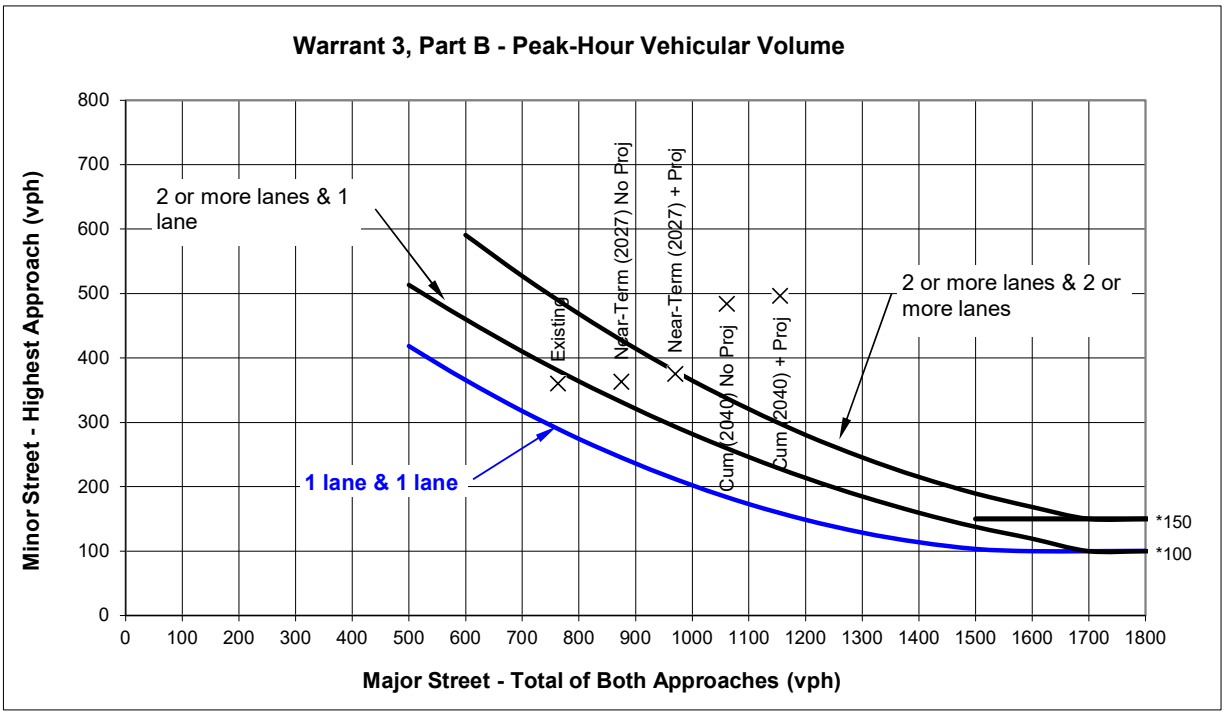
[3] ITE Trip Generation Manual, 11th Edition, 2021 provides trip rates per field for a soccer complex. The Proposed Project would include active recreational areas in the Ravenswood Avenue Parklet. It is assumed that the park would have play structures and open field areas for warm-ups or casual play. The number of soccer fields on the park was estimated based on the size of a standard soccer field.

[4] Existing use trip estimates are based on driveway counts conducted by Fehr & Peers in 2021. Of the 1,100 employees on-site, Buildings P, S, T had 700 employees. The trip generation for these buildings is proportioned based on employees.

Appendix E
Signal Warrant Analysis

Parkline TIA

Bay Road and Ringwood Avenue **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Bay Road	X		763	875	970	1061	1155			
Minor Street - Highest Approach	Ringwood Avenue	X		360	363	375	484	496			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Bay Road — Critical Approach Speed* (mph) 30

Minor Street: Ringwood Avenue — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…..…..…..…….

In built up area of isolated community of < 10,000 population……..…..……..

☐ ☐ or } **Rural (R)**

☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	AM PEAK PERIOD							
	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB			
Highest Minor Street Average Delay (sec/veh)	27.4	35.0	38.1	101.4	110.1			
Corresponding Minor Street Approach Volume (veh/hr)	360	363	375	484	496			
Minor Street Total Delay (veh-hrs)	2.7	3.5	4.0	13.6	15.2			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	Yes	Yes	Yes	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	AM PEAK PERIOD: Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Bay Road	X		763	875	970	1061	1155			
Minor Street - Highest Approach	Ringwood Avenue	X		360	363	375	484	496			
Signal Warranted based on Part B?				**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

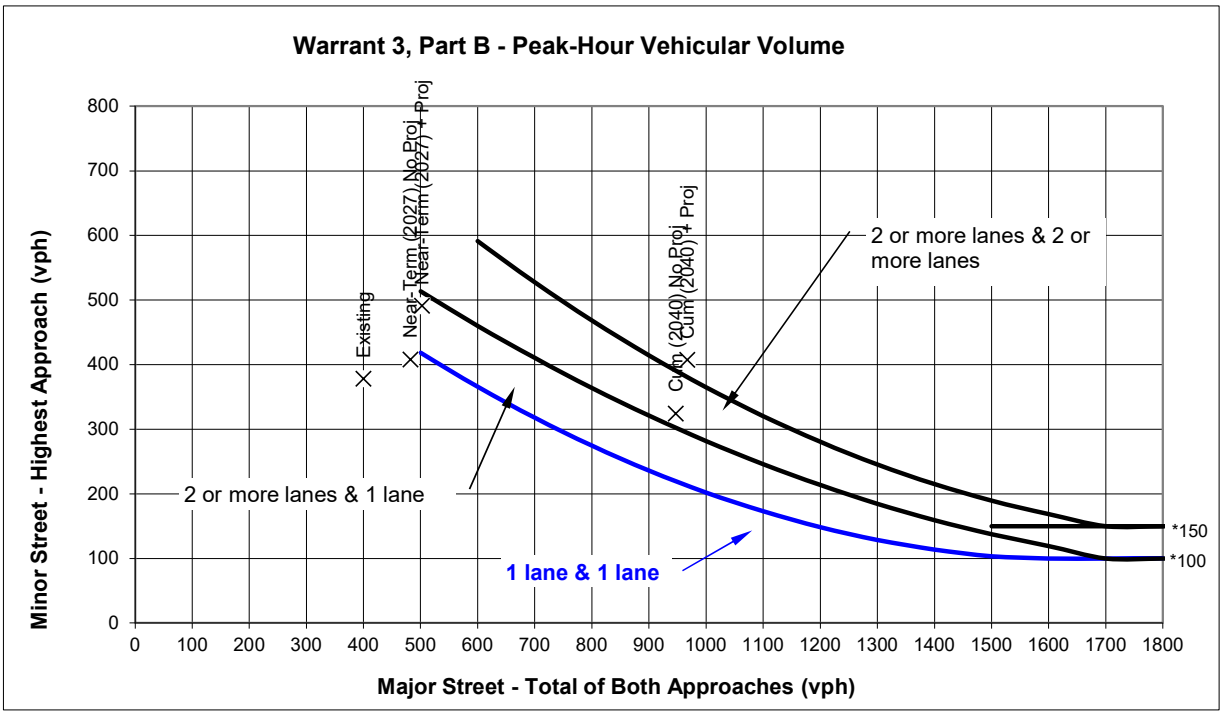
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Bay Road and Ringwood Avenue **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Bay Road	X		400	482	502	947	967			
Minor Street - Highest Approach	Ringwood Avenue	X		378	408	491	324	407			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**Yes**	**Yes**	**Yes**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Bay Road — Critical Approach Speed* (mph) 30

Minor Street: Ringwood Avenue — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…..…..…..……. ☐ or ☐ **Rural (R)**

In built up area of isolated community of < 10,000 population……..…..…….. ☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

PM PEAK HOUR

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB			
Highest Minor Street Average Delay (sec/veh)	13.5	16.4	23.6	20.0	31.3			
Corresponding Minor Street Approach Volume (veh/hr)	378	408	491	324	407			
Minor Street Total Delay (veh-hrs)	1.4	1.9	3.2	1.8	3.5			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	Yes	Yes	Yes	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

PART B

PM PEAK HOUR

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Bay Road	X		400	482	502	947	967			
Minor Street - Highest Approach	Ringwood Avenue	X		378	408	491	324	407			
Signal Warranted based on Part B?				**No**	**No**	**Yes**	**Yes**	**Yes**			

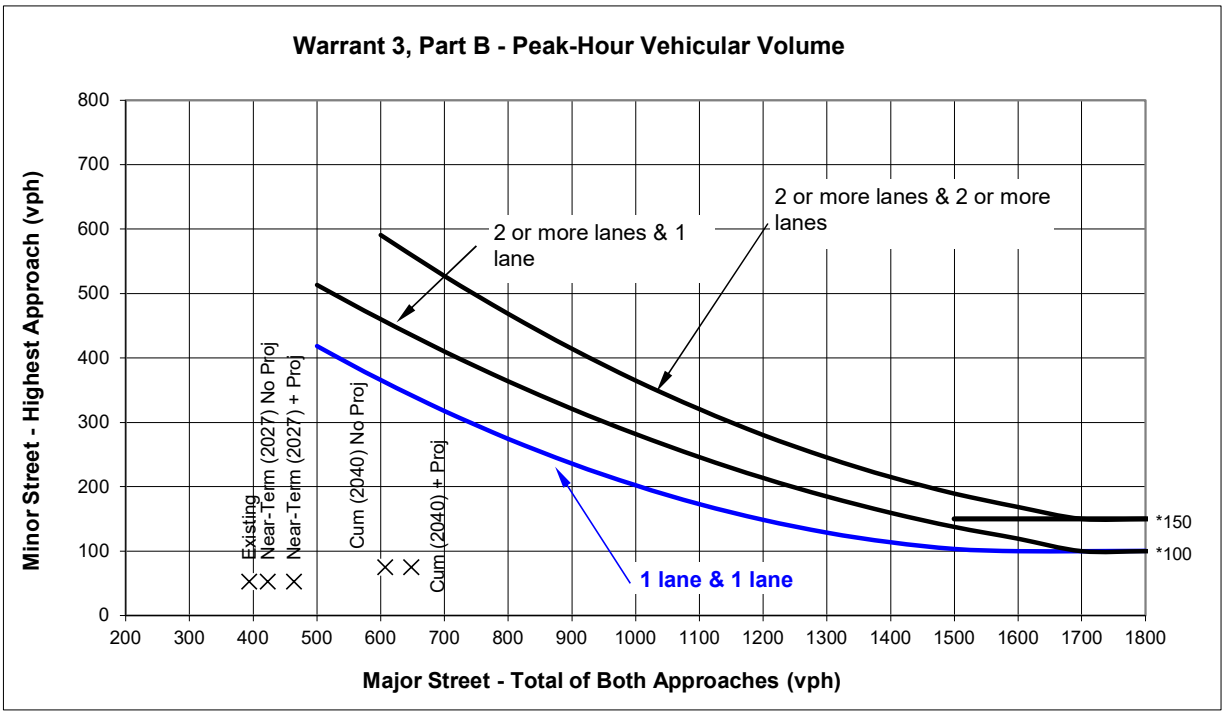
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Burgess Drive **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		394	423	464	607	648			
Minor Street - Highest Approach	Burgess Drive	X		53	53	53	75	75			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph) 30

Minor Street: Burgess Drive — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..……..……..……..

In built up area of isolated community of < 10,000 population……..……..……..

or — **Rural (R)**

☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB			
Highest Minor Street Average Delay (sec/veh)	8.1	8.2	8.3	8.9	9.0			
Corresponding Minor Street Approach Volume (veh/hr)	53	53	53	75	75			
Minor Street Total Delay (veh-hrs)	0.1	0.1	0.1	0.2	0.2			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	No	No			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		394	423	464	607	648			
Minor Street - Highest Approach	Burgess Drive	X		53	53	53	75	75			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

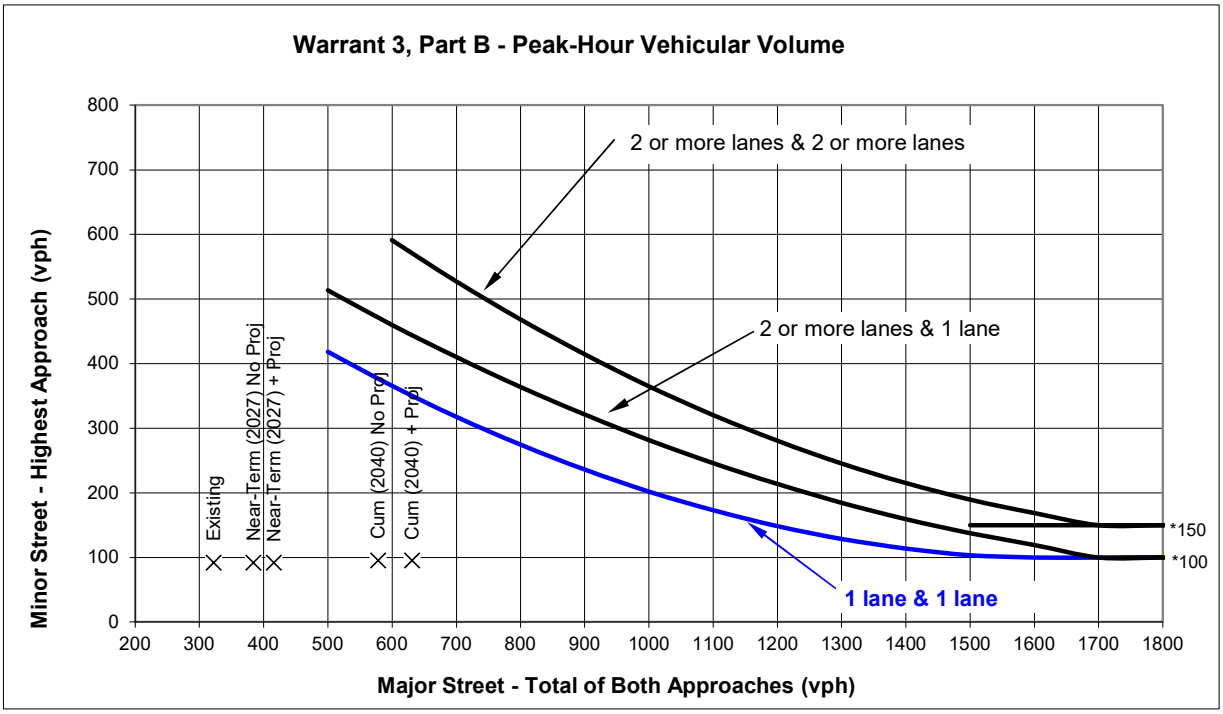
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Burgess Drive **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		322	384	416	578	631			
Minor Street - Highest Approach	Burgess Drive	X		92	92	92	95	95			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph) 30

Minor Street: Burgess Drive — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)…… ☐ or ☐ **Rural (R)**

In built up area of isolated community of < 10,000 population…… ☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

PM PEAK HOUR

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB			
Highest Minor Street Average Delay (sec/veh)	8.5	8.7	8.9	9.6	9.9			
Corresponding Minor Street Approach Volume (veh/hr)	92	92	92	95	95			
Minor Street Total Delay (veh-hrs)	0.2	0.2	0.2	0.3	0.3			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	Yes	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

PM PEAK HOUR

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		322	384	416	578	631			
Minor Street - Highest Approach	Burgess Drive	X		92	92	92	95	95			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

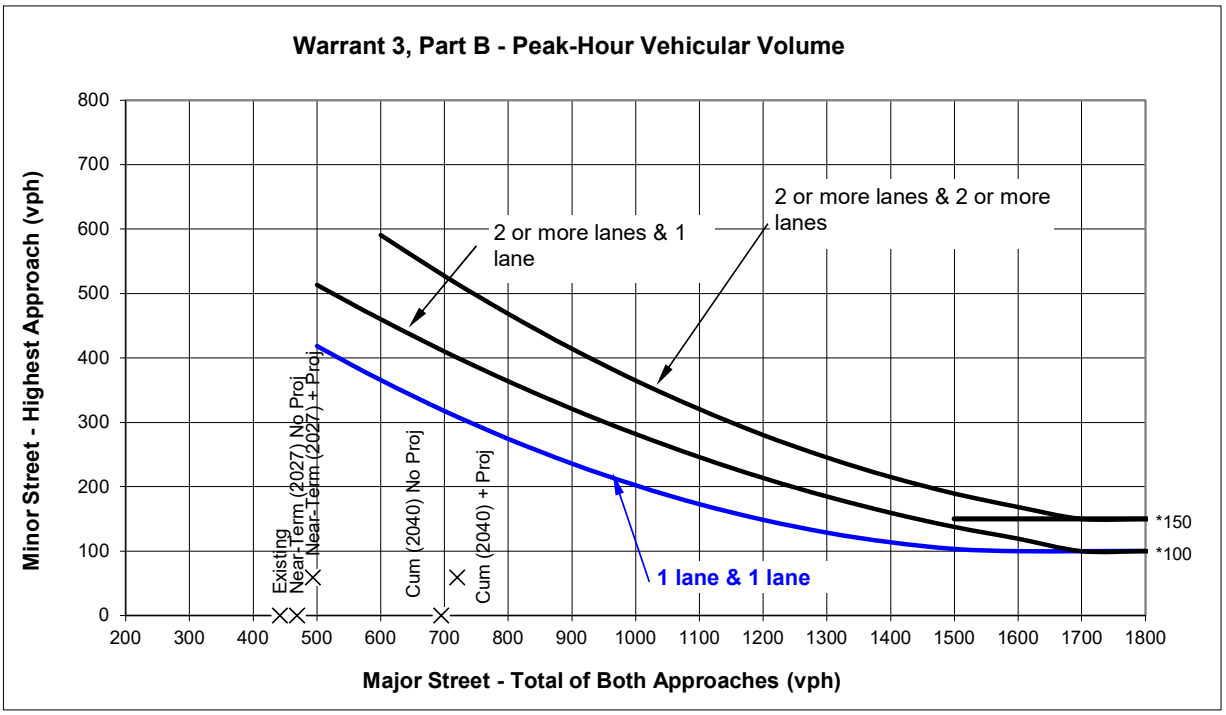
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Proj Dwy N **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	469	494	695	720			
Minor Street - Highest Approach	Proj Dwy N/	X		0	0	59	0	59			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph): 30

Minor Street: Proj Dwy N/ — Critical Approach Speed* (mph): 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..……..……..……..

In built up area of isolated community of < 10,000 population……..……..……..

or — **Rural (R)**

☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	WB	WB	WB	WB	WB			
Highest Minor Street Average Delay (sec/veh)	0.0	0.0	11.3	0.0	13.2			
Corresponding Minor Street Approach Volume (veh/hr)	0	0	59	0	59			
Minor Street Total Delay (veh-hrs)	0.0	0.0	0.2	0.0	0.2			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	No	No			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	469	494	695	720			
Minor Street - Highest Approach	Proj Dwy N/	X		0	0	59	0	59			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

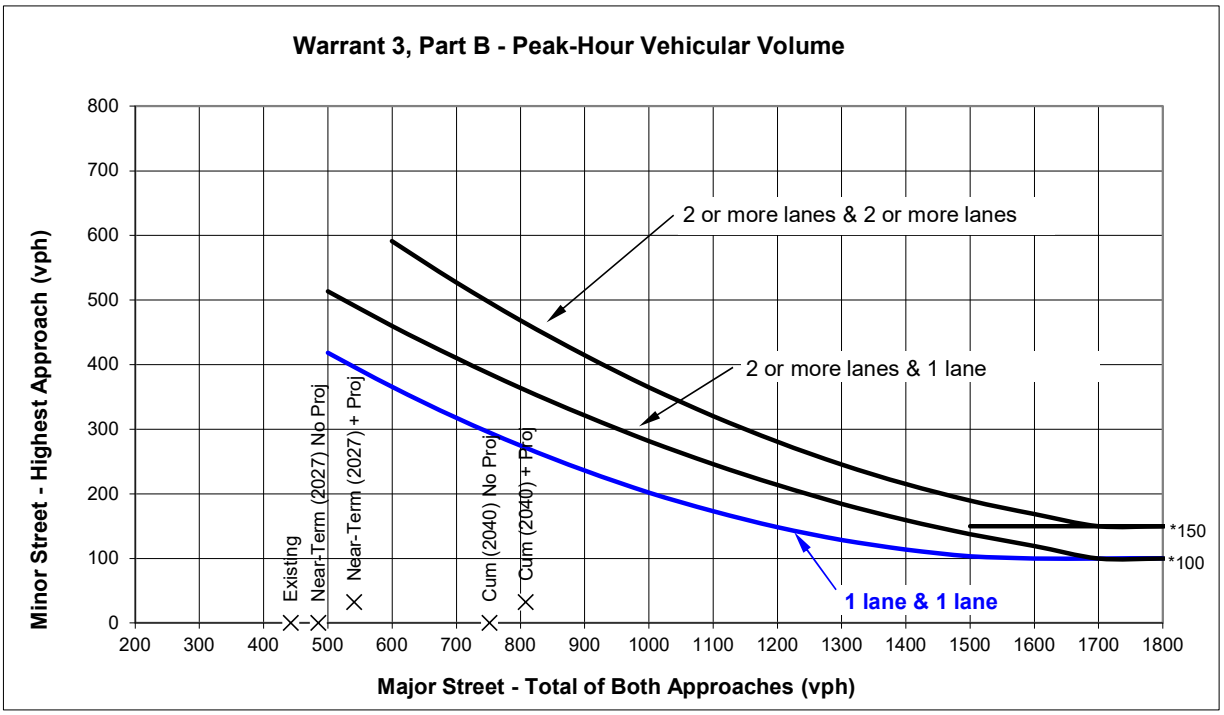
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Proj Dwy N **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	485	541	752	808			
Minor Street - Highest Approach	Proj Dwy N/	X		0	0	32	0	32			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph) 30

Minor Street: Proj Dwy N/ — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…….....…….. ☐

or

In built up area of isolated community of < 10,000 population……..…….. ☐ **Rural (R)**

☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

PM PEAK HOUR

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	WB	WB	WB	WB	WB			
Highest Minor Street Average Delay (sec/veh)	0.0	0.0	11.3	0.0	13.3			
Corresponding Minor Street Approach Volume (veh/hr)	0	0	32	0	32			
Minor Street Total Delay (veh-hrs)	0.0	0.0	0.1	0.0	0.1			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	Yes	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

PM PEAK HOUR

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	485	541	752	808			
Minor Street - Highest Approach	Proj Dwy N/	X		0	0	32	0	32			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

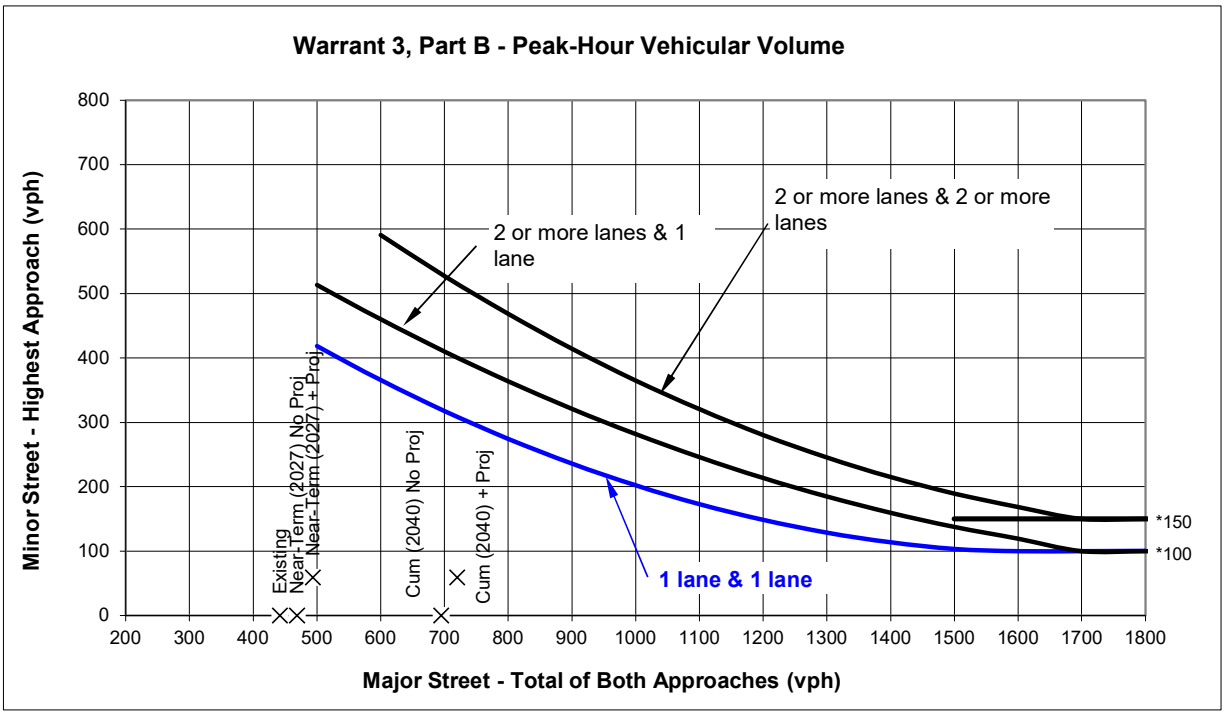
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Proj Dwy S **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	469	494	695	720			
Minor Street - Highest Approach	Proj Dwy S/	X		0	0	59	0	59			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph): 30

Minor Street: Proj Dwy S/ — Critical Approach Speed* (mph): 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..……..……..……..

In built up area of isolated community of < 10,000 population……..……..……..

or — **Rural (R)**

☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

AM PEAK PERIOD

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	WB	WB	WB	WB	WB			
Highest Minor Street Average Delay (sec/veh)	0.0	0.0	11.3	0.0	13.2			
Corresponding Minor Street Approach Volume (veh/hr)	0	0	59	0	59			
Minor Street Total Delay (veh-hrs)	0.0	0.0	0.2	0.0	0.2			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	No	No			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

AM PEAK PERIOD

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	469	494	695	720			
Minor Street - Highest Approach	Proj Dwy S/	X		0	0	59	0	59			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

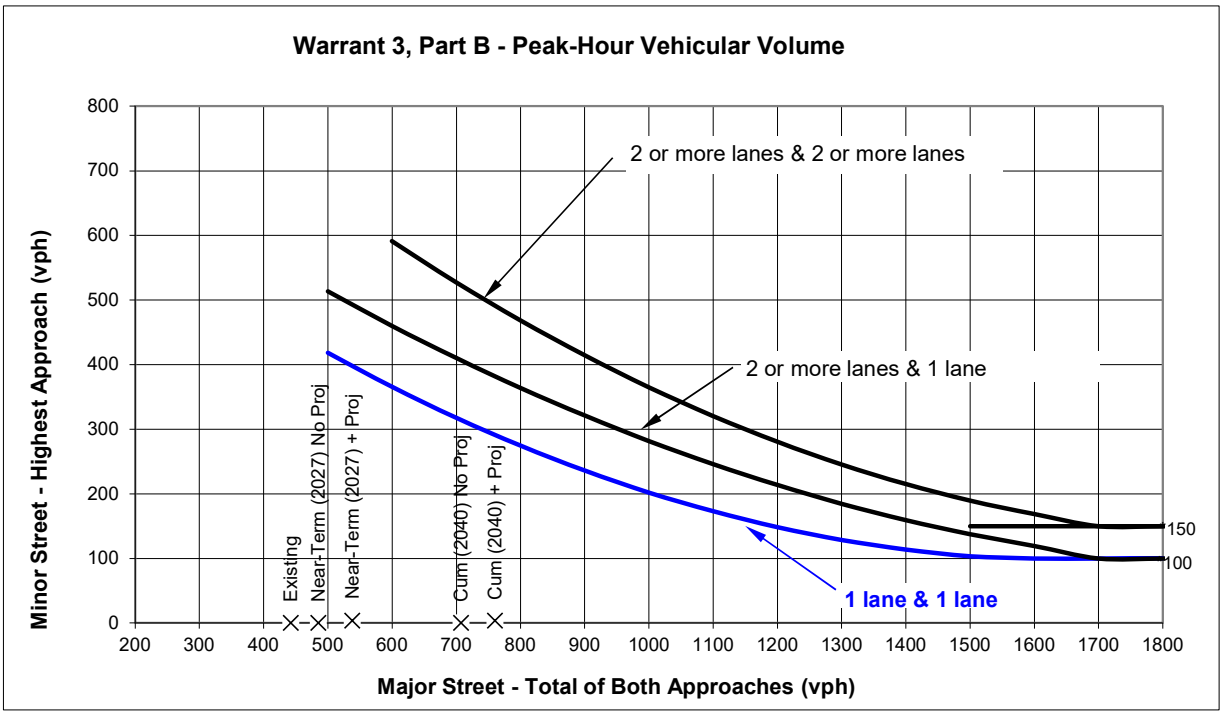
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Proj Dwy S **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	485	538	707	760			
Minor Street - Highest Approach	Proj Dwy S/	X		0	0	4	0	4			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph) 30

Minor Street: Proj Dwy S/ — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…….....…….. ☐ or ☐ **Rural (R)**

In built up area of isolated community of < 10,000 population……..…….. ☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	PM PEAK HOUR							
	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	WB	WB	WB	WB	WB			
Highest Minor Street Average Delay (sec/veh)	0.0	0.0	7.9	0.0	8.4			
Corresponding Minor Street Approach Volume (veh/hr)	0	0	4	0	4			
Minor Street Total Delay (veh-hrs)	0.0	0.0	0.0	0.0	0.0			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	Yes	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		442	485	538	707	760			
Minor Street - Highest Approach	Proj Dwy S/	X		0	0	4	0	4			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

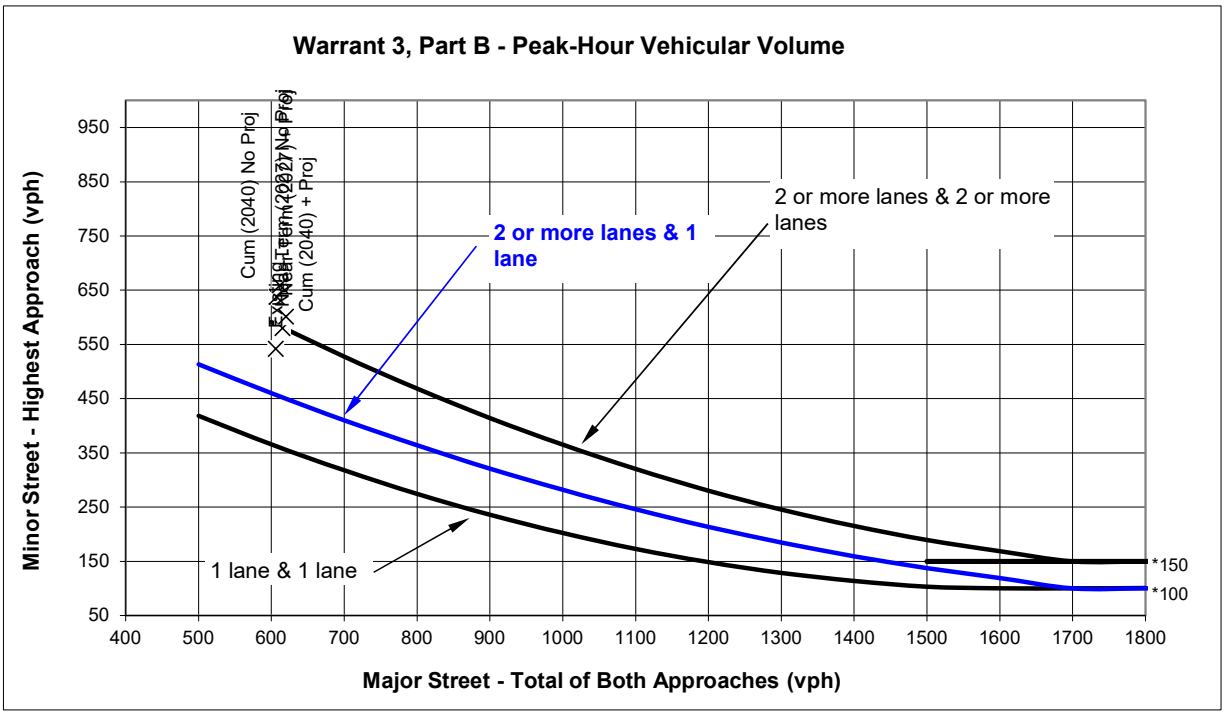
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Avy Avenue / Santa Cruz Avenue		X	606	615	620	607	612			
Minor Street - Highest Approach	Santa Cruz Avenue/ Orange Avenue	X		542	580	601	638	659			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Avy Avenue / Santa Cruz Avenue — Critical Approach Speed* (mph) 30

Minor Street: Santa Cruz Avenue/ Orange Avenue — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…..…..…..……. ☐

In built up area of isolated community of < 10,000 population……..…..…….. ☐ } or — **Rural (R)**

☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB			
Highest Minor Street Average Delay (sec/veh)	19.5	23.5	26.7	26.7	30.6			
Corresponding Minor Street Approach Volume (veh/hr)	542	580	601	638	659			
Minor Street Total Delay (veh-hrs)	2.9	3.8	4.5	4.7	5.6			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	Yes	Yes	Yes	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Avy Avenue / Santa Cruz Avenue		X	606	615	620	607	612			
Minor Street - Highest Approach	Santa Cruz Avenue/ Orange Avenue	X		542	580	601	638	659			
Signal Warranted based on Part B?				**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

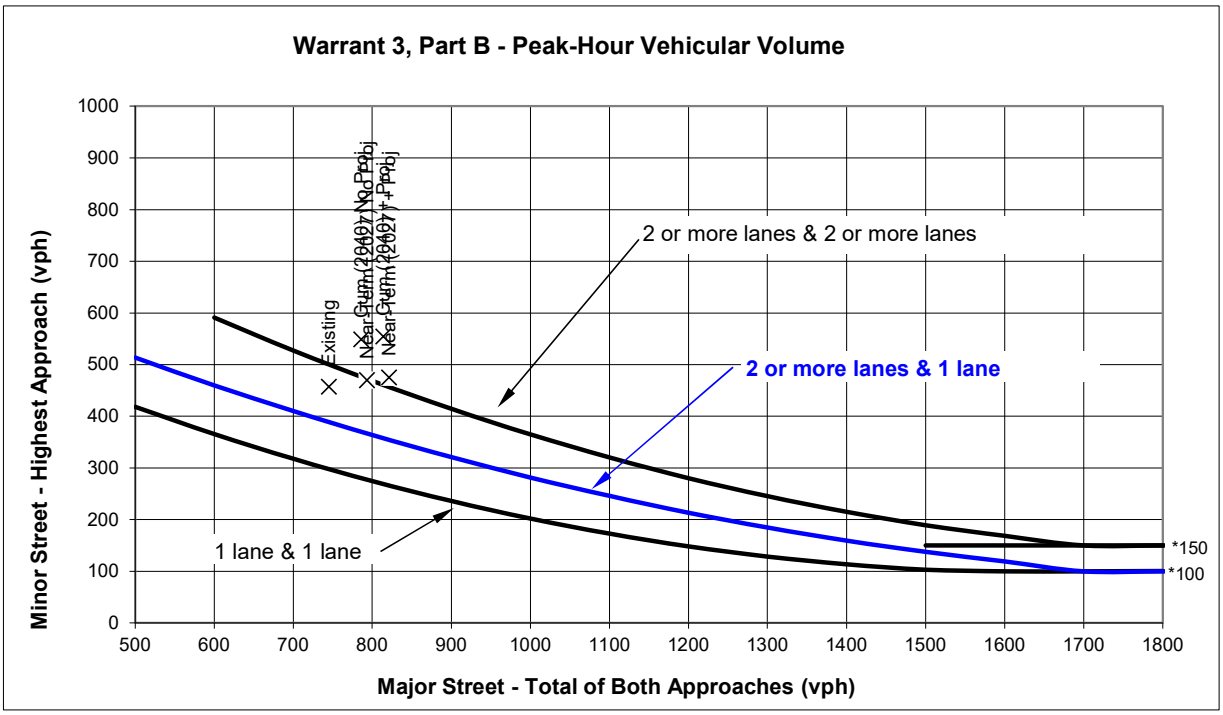
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Orange Avenue/Santa Cruz Avenue and Avy Avenue/Santa Cruz Avenue **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Avy Avenue / Santa Cruz Avenue		X	745	793	821	786	814			
Minor Street - Highest Approach	Santa Cruz Avenue/ Orange Avenue	X		457	470	475	549	554			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Avy Avenue / Santa Cruz Avenue — Critical Approach Speed* (mph) 30

Minor Street: Santa Cruz Avenue/ Orange Avenue — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…..…..…..……. ☐

In built up area of isolated community of < 10,000 population……..…..…….. ☐ } or — **Rural (R)**

☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	PM PEAK HOUR							
	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	WB	WB	WB	WB	WB			
Highest Minor Street Average Delay (sec/veh)	22.5	30.5	38.4	43.3	55.2			
Corresponding Minor Street Approach Volume (veh/hr)	543	591	619	584	612			
Minor Street Total Delay (veh-hrs)	3.4	5.0	6.6	7.0	9.4			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	Yes	Yes	Yes	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	PM PEAK HOUR: Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Avy Avenue / Santa Cruz Avenue		X	745	793	821	786	814			
Minor Street - Highest Approach	Santa Cruz Avenue/ Orange Avenue	X		457	470	475	549	554			
Signal Warranted based on Part B?				**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

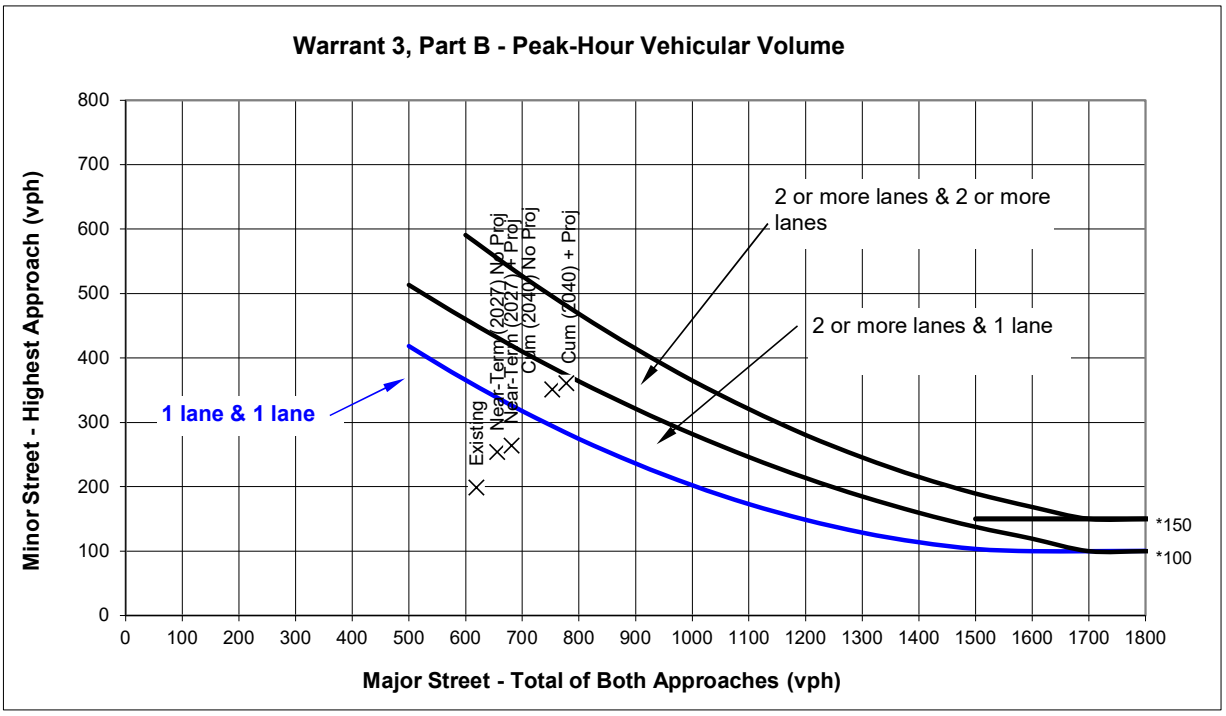
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Encinal Street **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Encinal Street	X		619	656	681	753	778			
Minor Street - Highest Approach	Laurel Street	X		199	254	264	351	361			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**Yes**	**Yes**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Encinal Street — Critical Approach Speed* (mph) 30

Minor Street: Laurel Street — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..……..……..…….. ☐ or ☐ **Rural (R)**

In built up area of isolated community of < 10,000 population……..……..…….. ☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB			
Highest Minor Street Average Delay (sec/veh)	12.6	16.2	17.4	34.8	40.8			
Corresponding Minor Street Approach Volume (veh/hr)	199	254	264	351	361			
Minor Street Total Delay (veh-hrs)	0.7	1.1	1.3	3.4	4.1			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	Yes	Yes	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	No	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**No**	**Yes**	**Yes**	**Yes**	**Yes**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Encinal Street	X		619	656	681	753	778			
Minor Street - Highest Approach	Laurel Street	X		199	254	264	351	361			
Signal Warranted based on Part B?				**No**	**No**	**No**	**Yes**	**Yes**			

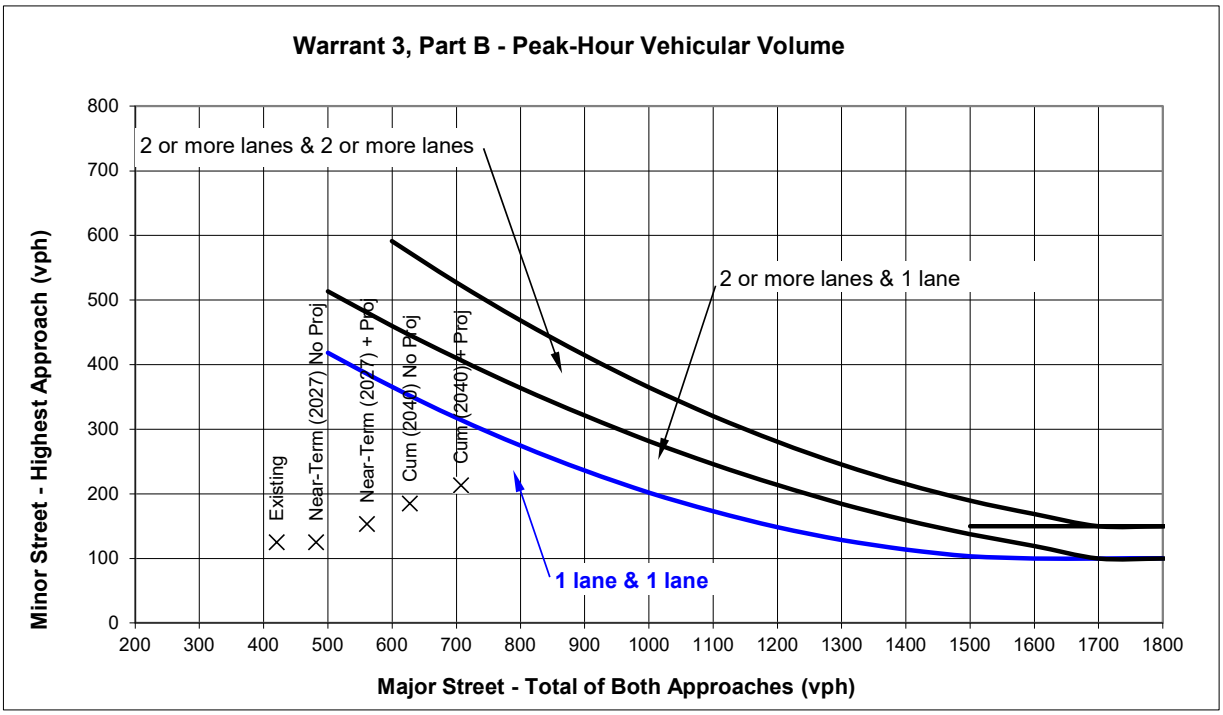
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Encinal Street **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Encinal Street	X		420	482	561	628	707			
Minor Street - Highest Approach	Laurel Street/	X		125	125	153	185	213			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Encinal Street — Critical Approach Speed* (mph) 30

Minor Street: Laurel Street/ — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)…… ☐ or ☐ **Rural (R)**

In built up area of isolated community of < 10,000 population…… ☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	PM PEAK HOUR							
	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB			
Highest Minor Street Average Delay (sec/veh)	9.0	9.3	10.1	11.2	12.5			
Corresponding Minor Street Approach Volume (veh/hr)	125	125	153	185	213			
Minor Street Total Delay (veh-hrs)	0.3	0.3	0.4	0.6	0.7			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Encinal Street	X		420	482	561	628	707			
Minor Street - Highest Approach	Laurel Street/	X		125	125	153	185	213			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

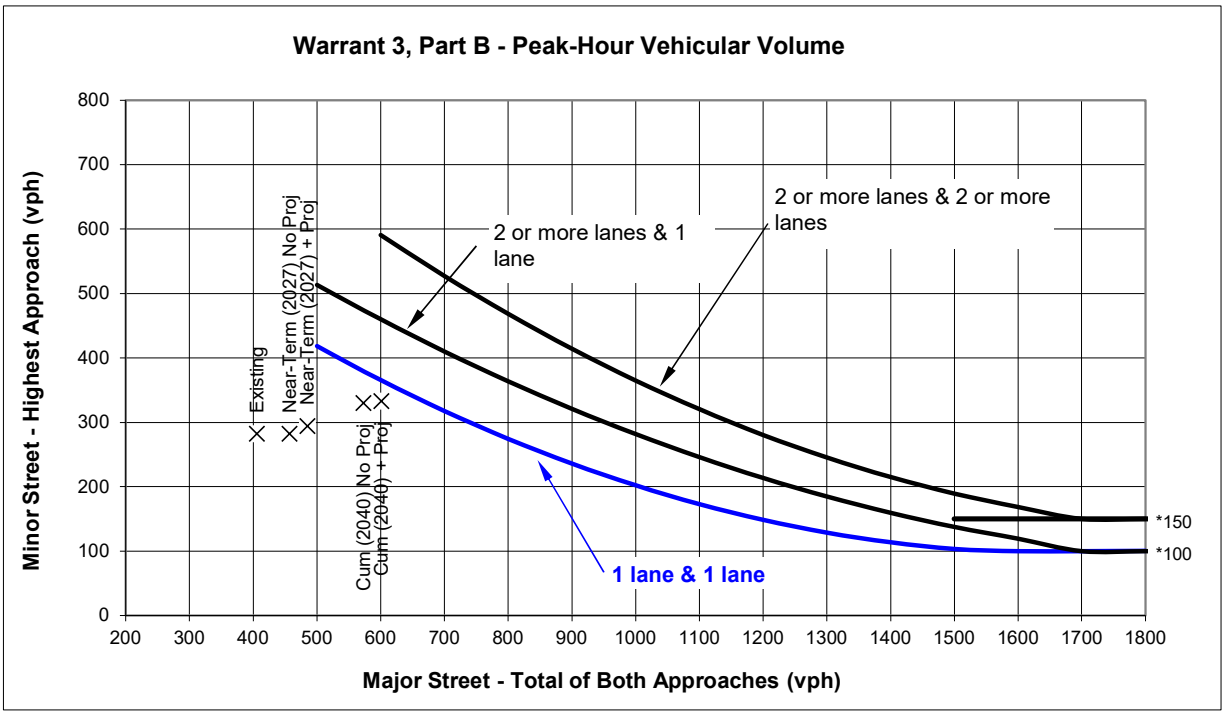
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Glenwood Avenue **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		406	457	485	573	601			
Minor Street - Highest Approach	Glenwood Avenue	X		282	282	294	330	333			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph) 30

Minor Street: Glenwood Avenue — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..……..……..……..

In built up area of isolated community of < 10,000 population……..……..……..

or } **Rural (R)**

☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	WB	WB	EB	WB	WB			
Highest Minor Street Average Delay (sec/veh)	27.7	39.0	66.5	108.6	125.1			
Corresponding Minor Street Approach Volume (veh/hr)	282	282	294	330	333			
Minor Street Total Delay (veh-hrs)	2.2	3.1	5.4	10.0	11.6			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	Yes	Yes	Yes	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		406	457	485	573	601			
Minor Street - Highest Approach	Glenwood Avenue	X		282	282	294	330	333			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

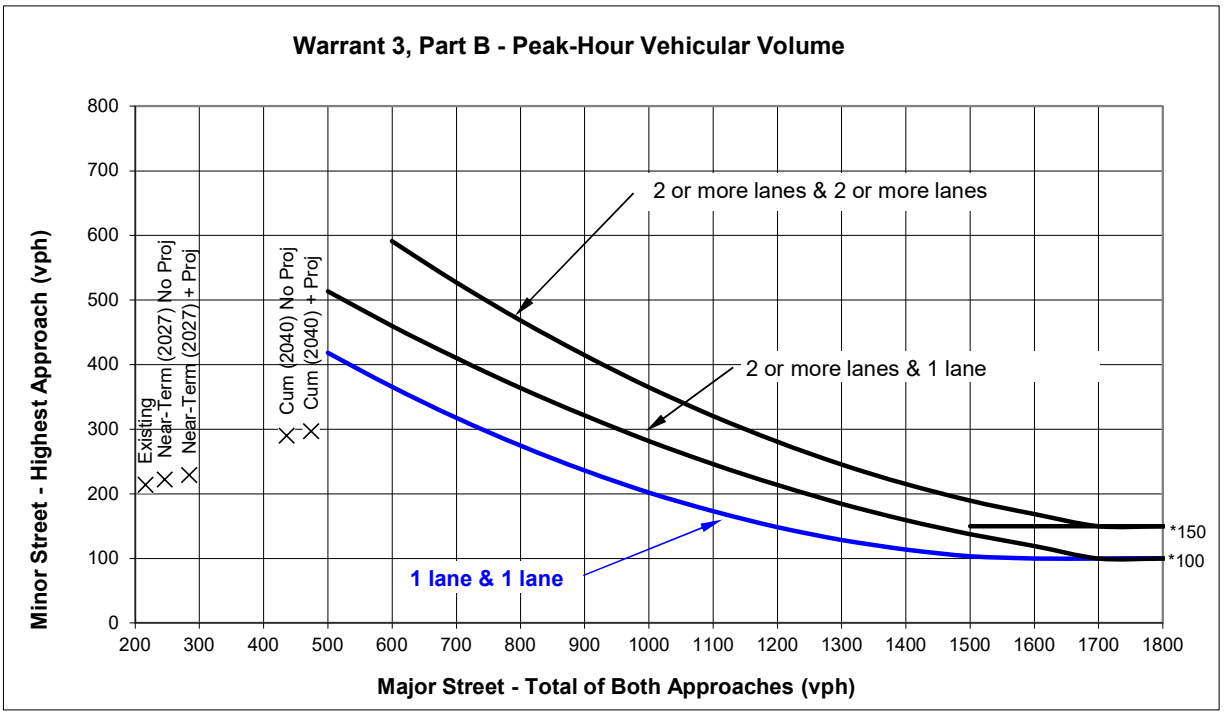
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Glenwood Avenue **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Laurel Street	X		216	246	284	436	474			
Minor Street - Highest Approach	Glenwood Avenue	X		214	222	229	290	297			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Laurel Street — Critical Approach Speed* (mph) 30

Minor Street: Glenwood Avenue — Critical Approach Speed* (mph) 30

**Posted Speed.*

☐ Critical speed of major street traffic > 50 mph (64 km/h)……..…….....…….. or ☐ In built up area of isolated community of < 10,000 population……..…….. **Rural (R)**

☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
	PM PEAK HOUR							
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB			
Highest Minor Street Average Delay (sec/veh)	9.8	10.2	10.7	14.2	15.7			
Corresponding Minor Street Approach Volume (veh/hr)	214	222	229	290	297			
Minor Street Total Delay (veh-hrs)	0.6	0.6	0.7	1.1	1.3			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	Yes	Yes			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	Yes	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**Yes**	**Yes**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
				PM PEAK HOUR							
Major Street - Both Approaches	Laurel Street	X		216	246	284	436	474			
Minor Street - Highest Approach	Glenwood Avenue	X		214	222	229	290	297			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

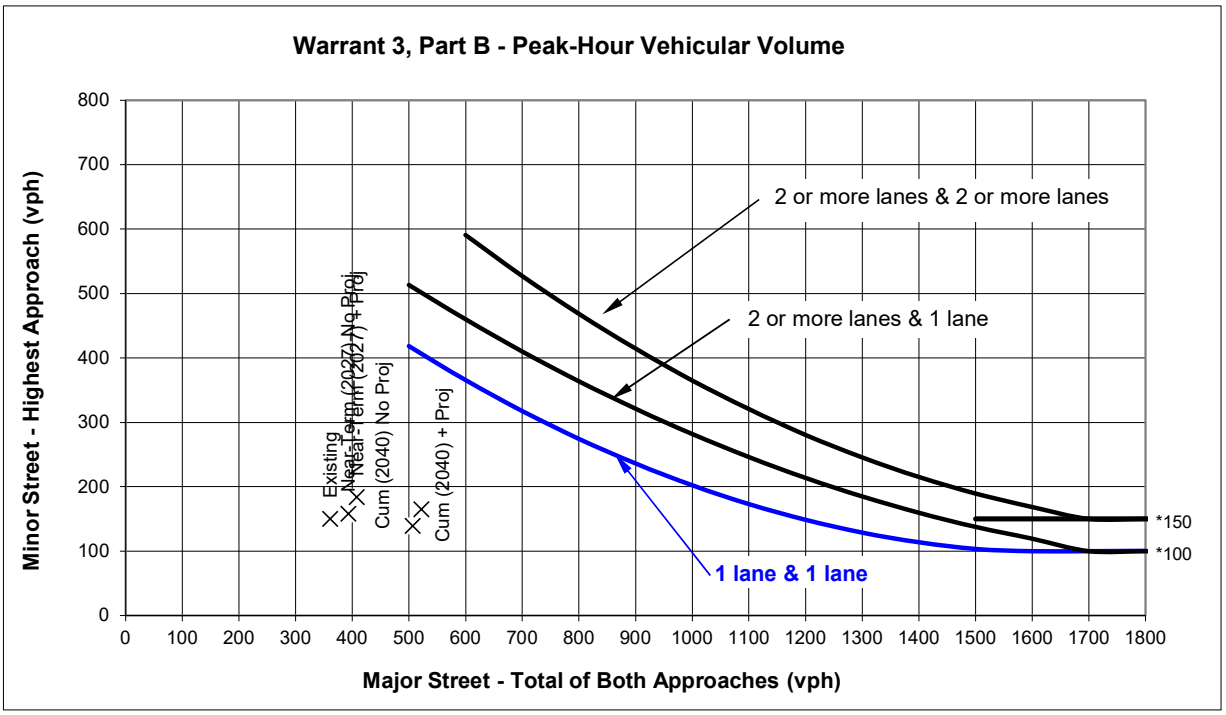
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Willow Road **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Willow Road	X		361	393	408	507	522			
Minor Street - Highest Approach	Laurel Street	X		150	158	184	139	165			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Willow Road — Critical Approach Speed* (mph) 30

Minor Street: Laurel Street — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..…..…..…..……. ☐ or ☐ **Rural (R)**

In built up area of isolated community of < 10,000 population……..…..…….. ☑ **Urban (U)**

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
	AM PEAK PERIOD							
Minor Street Approach Direction w/ Highest Delay	SB	SB	SB	SB	SB			
Highest Minor Street Average Delay (sec/veh)	9.8	10.1	10.6	10.3	10.9			
Corresponding Minor Street Approach Volume (veh/hr)	150	158	184	139	165			
Minor Street Total Delay (veh-hrs)	0.4	0.4	0.5	0.4	0.5			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	No	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
				AM PEAK PERIOD							
Major Street - Both Approaches	Willow Road	X		361	393	408	507	522			
Minor Street - Highest Approach	Laurel Street	X		150	158	184	139	165			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

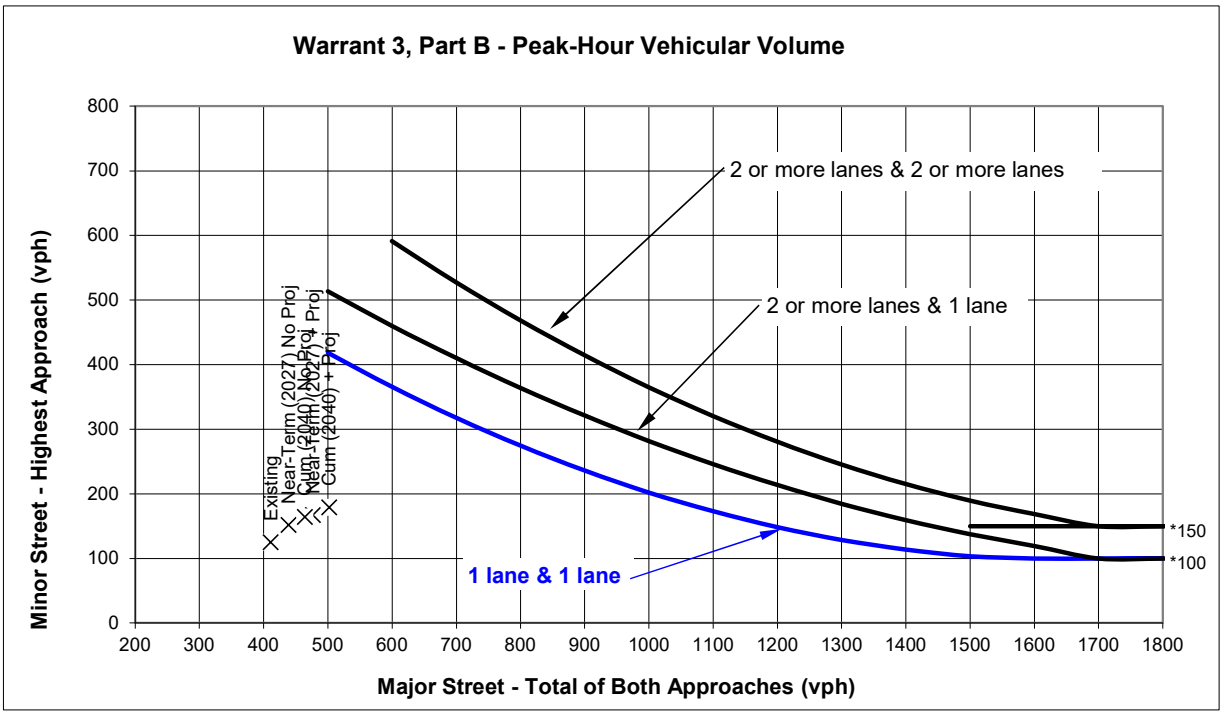
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Laurel Street and Willow Road **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Willow Road	X		411	439	477	464	502			
Minor Street - Highest Approach	Laurel Street/	X		125	152	167	164	179			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Willow Road — Critical Approach Speed* (mph) 30

Minor Street: Laurel Street/ — Critical Approach Speed* (mph) 30

**Posted Speed.*

☐ Critical speed of major street traffic > 50 mph (64 km/h)

☐ In built up area of isolated community of < 10,000 population — or — **Rural (R)**

☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	PM PEAK HOUR							
	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	SB	SB	SB	SB	SB			
Highest Minor Street Average Delay (sec/veh)	8.8	9.2	9.6	14.3	15.8			
Corresponding Minor Street Approach Volume (veh/hr)	125	152	167	164	179			
Minor Street Total Delay (veh-hrs)	0.3	0.4	0.4	0.6	0.8			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	No	No	No			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes: One	Approach Lanes: 2 or More	PM PEAK HOUR: Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Willow Road	X		411	439	477	464	502			
Minor Street - Highest Approach	Laurel Street/	X		125	152	167	164	179			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

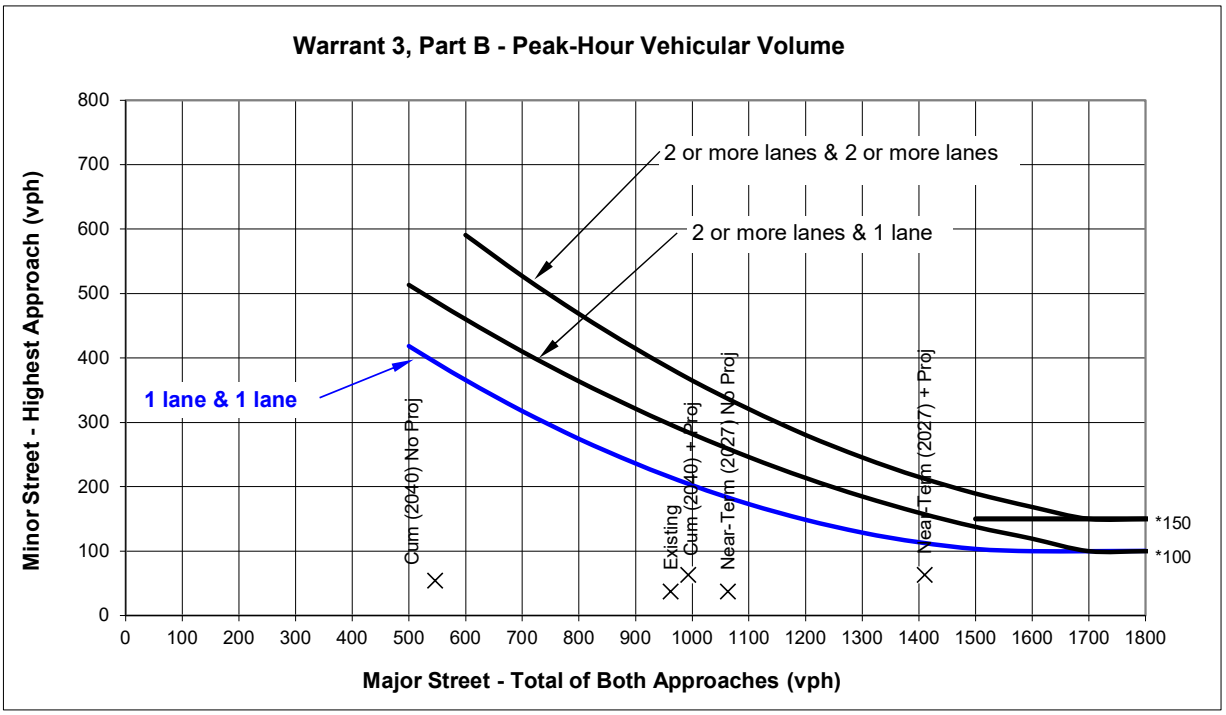
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Project Dwy/Pine Street and Ravenswood Avenue **AM PEAK PERIOD**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Ravenswood Avenue	X		962	1063	1410	546	993			
Minor Street - Highest Approach	Proj Dwy	X		37	37	63	54	63			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/21/23

Major Street: Ravenswood Avenue — Critical Approach Speed* (mph): 30

Minor Street: Proj Dwy/Pine Street — Critical Approach Speed* (mph): 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)……..……..……..……..

In built up area of isolated community of < 10,000 population……..……..……..

or — **Rural (R)**

Urban (U)

AM PEAK PERIOD

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	AM PEAK PERIOD							
	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj	0:00	0:00	
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	SB	SB			
Highest Minor Street Average Delay (sec/veh)	20.0	20.1	52.4	13.7	23.4			
Corresponding Minor Street Approach Volume (veh/hr)	8	8	63	54	54			
Minor Street Total Delay (veh-hrs)	0.0	0.0	0.9	0.2	0.4			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	No	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes		AM PEAK PERIOD							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Ravenswood Avenue	X		962	1063	1410	546	993			
Minor Street - Highest Approach	Proj Dwy/Pine Street	X		37	37	63	54	63			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

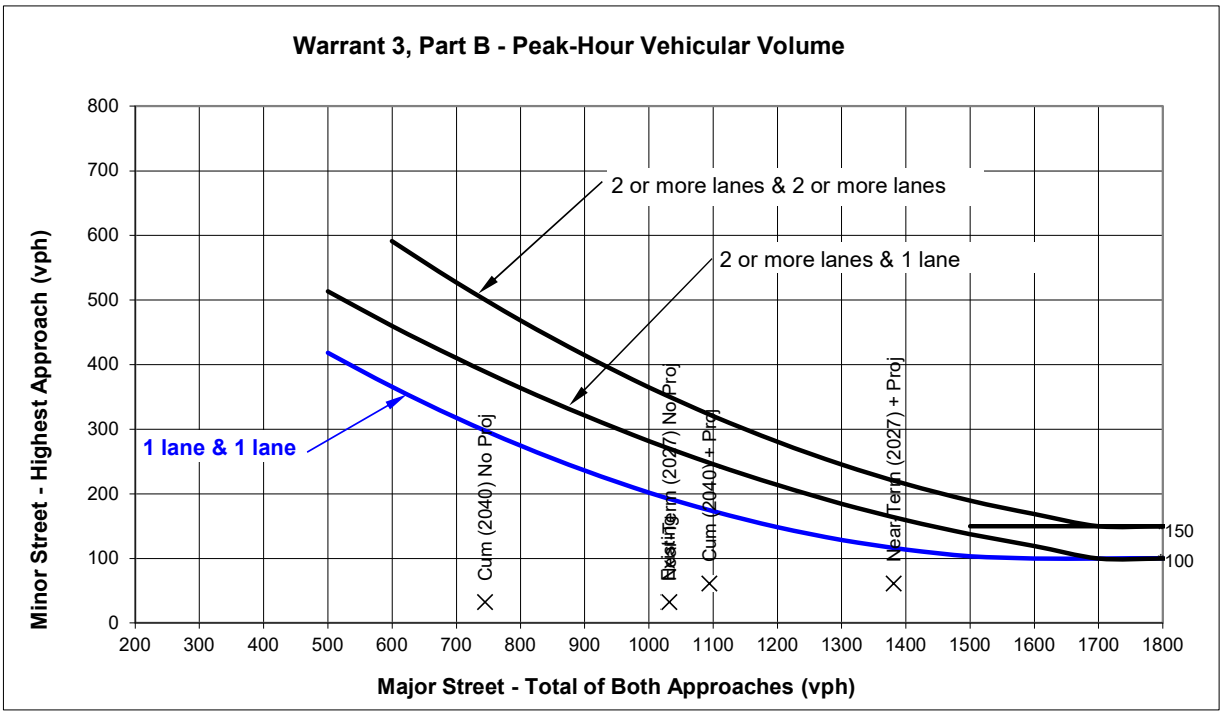
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Parkline TIA

Project Dwy/Pine Street and Ravenswood Avenue **PM PEAK HOUR**



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* .

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Part B - Peak-Hour Vehicular Volume

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Ravenswood Avenue	X		1030	1032	1381	745	1094			
Minor Street - Highest Approach	Project Dwy/ Pine Street	X		32	32	61	32	61			
Signal Warranted Based on Part B - Peak-Hour Volumes?				**No**	**No**	**No**	**No**	**No**			

*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Parkline TIA

TRAFFIC SIGNAL WARRANTS WORKSHEET

Analyst: NB date: 11/22/23

Major Street: Ravenswood Avenue — Critical Approach Speed* (mph) 30

Minor Street: Project Dwy/ Pine Street — Critical Approach Speed* (mph) 30

**Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h)…… ☐ or ☐ **Rural (R)**

In built up area of isolated community of < 10,000 population…… ☑ **Urban (U)**

PM PEAK HOUR

Warrant 3 - Peak Hour

PART A

(All parts 1, 2, and 3 below must be satisfied)

	PM PEAK HOUR							
	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB			
Highest Minor Street Average Delay (sec/veh)	2.6	2.6	2.2	2.6	2.2			
Corresponding Minor Street Approach Volume (veh/hr)	32	32	61	32	61			
Minor Street Total Delay (veh-hrs)	0.0	0.0	0.0	0.0	0.0			
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No			
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	No	No	No	No	No			
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes			
Signal Warranted based on Part A?	**No**	**No**	**No**	**No**	**No**			

PART B

		Approach Lanes		PM PEAK HOUR							
		One	2 or More	Existing	Near-Term (2027) No Proj	Near-Term (2027) + Proj	Cum (2040) No Proj	Cum (2040) + Proj			
Major Street - Both Approaches	Ravenswood Avenue	X		1030	1032	1381	745	1094			
Minor Street - Highest Approach	Project Dwy/ Pine Street	X		32	32	61	32	61			
Signal Warranted based on Part B?				**No**	**No**	**No**	**No**	**No**			

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

Notes:

Appendix F
Parkline TDM Plan

Draft Parkline Transportation Demand Management (TDM) Plan

Prepared for:
Lane Partners LLC / SRI International

January 5, 2024

SJ21-2095

FEHR & PEERS

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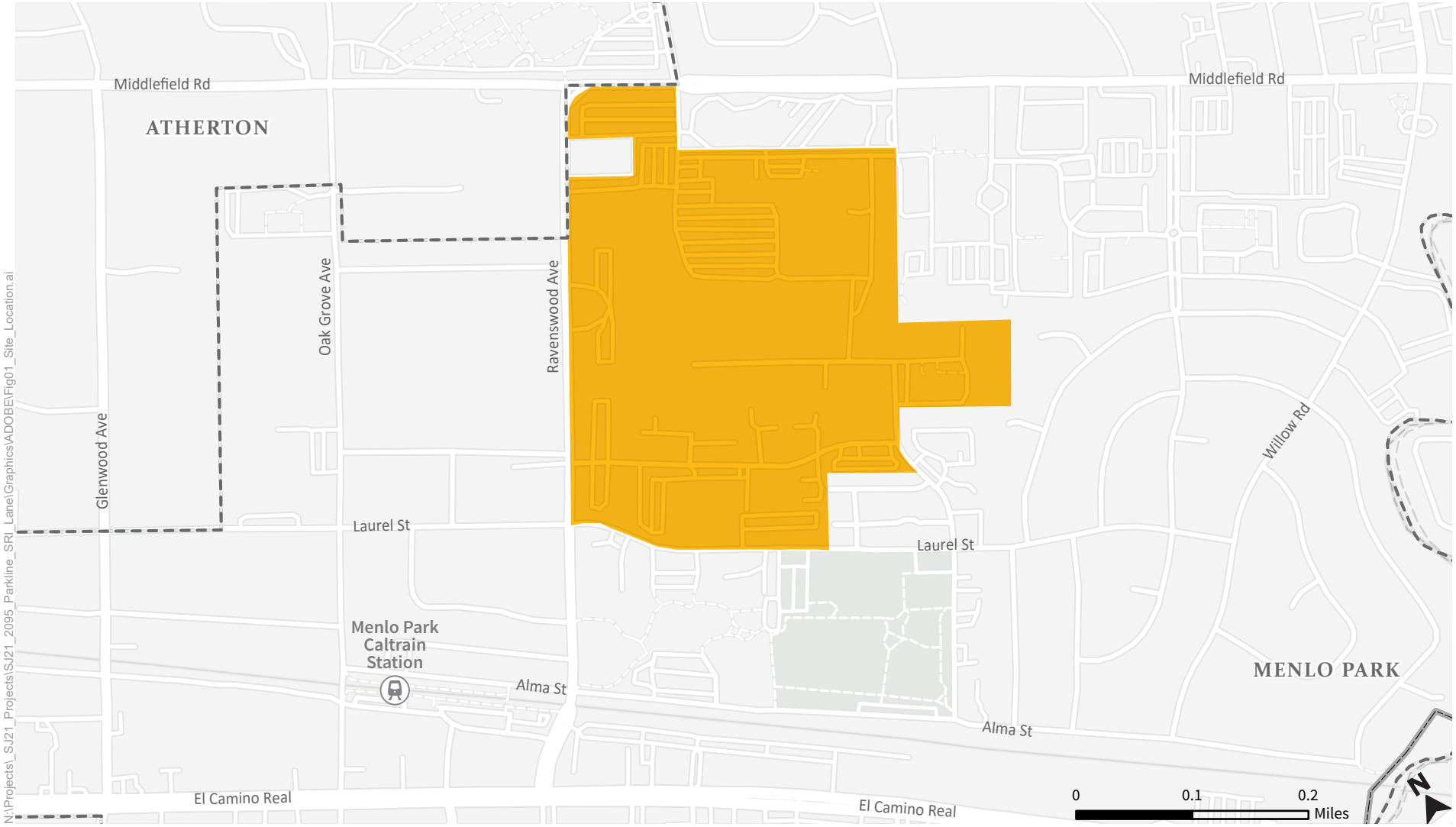
1. Introduction

Parkline is located within the City of Menlo Park, near the City's downtown and close to City Hall and Burgess Park. The site is within one half-mile of Menlo Park Caltrain Station. Parkline will transform the existing Stanford Research Institute (SRI) International campus into an open and inviting transit-oriented mixed-use neighborhood including a new sustainable office/research and development (R&D) campus with no net increase in commercial square footage, new housing units at a range of affordability levels, new bicycle, and pedestrian connections, and approximately 25 acres of open space. **Figure 1** shows the site location and the transportation network surrounding Parkline.

This Transportation Demand Management (TDM) Plan documents the TDM measures proposed for the residential and office/R&D components of Parkline. The primary purpose of any TDM plan is to lower the amount of development-generated vehicle traffic by creating measures, strategies, incentives, and policies to shift workers and residents from driving alone to using other travel modes including transit, carpooling, ridesharing, cycling, and walking. TDM strategies can include informational resources, physical site enhancements, monetary incentives, and more. In addition to reducing vehicles trips, the TDM Plan can reduce the parking demand of residents and office workers. This report presents the comprehensive TDM Plan for Parkline.

The existing and proposed transit, bicycle, and pedestrian facilities near the Parkline site are illustrated in this document to provide transportation context. The TDM Plan describes how Parkline's attributes such as the site's location (adjacent roadways and transit access), land uses (residential and office/R&D), physical design, and proposed improvements support alternative modes of transportation that supplement the proposed TDM measures provided to the Parkline employees and residents.



Project Area

Figure 1

Site Location

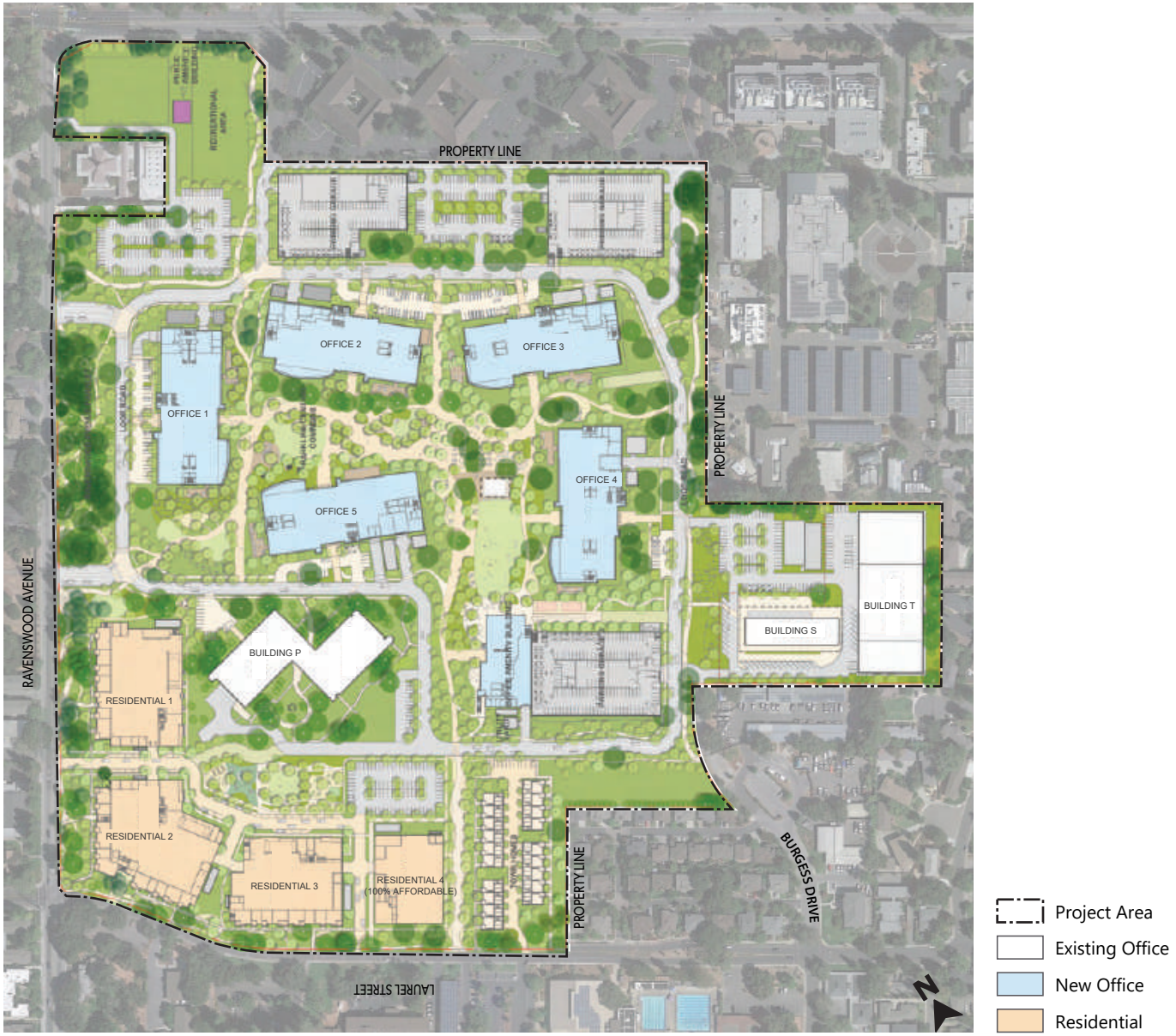
1.1 Project & Project Variant Descriptions

Figure 2 shows the proposed Parkline site plan. Parkline will include a new office/research and development (R&D) campus with no increase in office/R&D square footage compared to existing conditions; up to 550 new rental dwelling units at a range of affordability levels (comprised of 450 multi-family units and townhomes, and a proposed land dedication to an affordable housing developer that could accommodate up to 100 affordable units); new bicycle and pedestrian connections; approximately 26 acres of Parkline to be available as open space; removal and replacement of trees; and decommissioning of a 6 megawatt natural gas cogeneration plant.

In total, Parkline will include approximately 1,768,802 square feet (sf) of mixed-use development, with approximately 1,093,602 sf of office/R&D uses and approximately 675,200 sf of residential uses. Parkline will demolish all buildings on SRI International's Campus, excluding Buildings P, S, and T, which would remain onsite and be operated by SRI International and its tenants.

The City is also considering an Increased Development Variant, which is being studied under the Environmental Impact Report being prepared for Parkline pursuant to the California Environmental Quality Act. The Increased Development Variant is a variation of the Parkline proposal located at the same site, generally with the same objectives, background, and development controls, but with two specific differences: (1) the variant would include up to 250 additional residential rental dwelling units compared to the Parkline proposal (an increase from 550 to 800 units, inclusive of the 100 units to be developed by an affordable housing developer) as requested by the City Council during the scoping process in order to evaluate the potential impacts associated with increased residential density, and (2) the variant would include an underground emergency water reservoir that would be built and operated by the City of Menlo Park. The total office/R&D development in the Office/R&D District would remain the same as Parkline.

The TDM Plan will apply to the Parkline land uses as ultimately approved by the City.



Data Source: Parkline Master Plan, 2022, LANE PARTNERS

Figure 2

Parkline - Proposed Project Site Plan

2. Site Context – Transportation Services

The Parkline site is well served by the existing transportation system, which includes roadways, pedestrian and bicycle facilities, and transit services (i.e., Caltrain, SamTrans and Menlo Park community shuttles). The existing transit, bicycle, and pedestrian facilities, and planned Parkline improvements that will support travel to the site by modes of transportation other than driving alone, are described below. The data presented represents transit operating conditions based on the current published schedules.

2.1 Transit Service

Parkline is near several transit service options, including Caltrain, SamTrans and Menlo Park community shuttles. The City of Menlo Park encourages the use of transit as an alternative mode of transportation and is served by two major transit providers: San Mateo County Transit District (SamTrans) and Caltrain. SamTrans provides bus service throughout San Mateo County and into parts of San Francisco and Palo Alto. Caltrain provides commuter rail service between San Francisco and San José. In addition, Menlo Park operates community shuttles to Belle Haven / Bohannon Drive area, Sharon Heights, and in between Caltrain and Ivy Drive. The community shuttles offer connections with other regional transit agencies like Caltrain, SamTrans, and VTA. Additionally, the Menlo Park community shuttle includes the Shopper's Shuttle program, which is a door-to-door service for people who require extra assistance. The Shopper's Shuttle service operates three days a week for travel within Menlo Park, Palo Alto, and Redwood City. Paratransit services are also available for seniors and people with disabilities. The transit district also offers Redi-Wheels paratransit service for persons with disabilities who are unable to ride SamTrans' regular buses.

Figure 3 shows the existing transit bus routes and bus stops serving Parkline. **Table 1** summarizes hours of operation and service frequencies for the bus routes nearest the site.

2.1.1 Caltrain

Caltrain provides weekday commuter rail service between San José and San Francisco. There are currently 52 trains traveling northbound from San José to San Francisco and 52 trains traveling southbound from San Francisco to San José each weekday. A total of 75 trains serve the Menlo Park station each weekday.

The Caltrain weekday service in Menlo Park includes limited and local service. Limited service is an express service that stops at limited number of stations between San Francisco and San José, improving travel times for patrons. Local service stops at all stations, providing greater geographic coverage, but travel times are slower. There are 31 limited trains and 44 local trains serving Menlo Park on a weekday. The

Menlo Park Downtown station is located less than one half-mile (~2,500 feet) west of Parkline and can be accessed by a ten-minute walk or five-minute bicycle ride.

2.1.2 SamTrans Bus Service

SamTrans is a public transportation agency that provides bus service throughout San Mateo County including service in Menlo Park. SamTrans also operates commuter shuttles to Caltrain and BART stations as well as community shuttles in several local jurisdictions. SamTrams operates six regularly scheduled routes that either directly connect to or are within a short walking distance (less than one half-mile) of Parkline. Five of the routes provide service to Parkline along Middlefield Road, Ravenswood Avenue, or Laurel Street. The fifth route operates on El Camino Real.

Routes 82, 83, and 88 provide local service within the City of Menlo Park and Atherton, and only operate on days school is in session. The other three routes provide regional or subregional service. Routes 296 and 397 operate on Middlefield Road and serve East Palo Alto, west Menlo Park, and extends into Redwood City connecting to the downtown Caltrain Station. Route ECR provides service along El Camino Real from the Palo Alto Transit Center in the south to Daly City BART Station in the north.

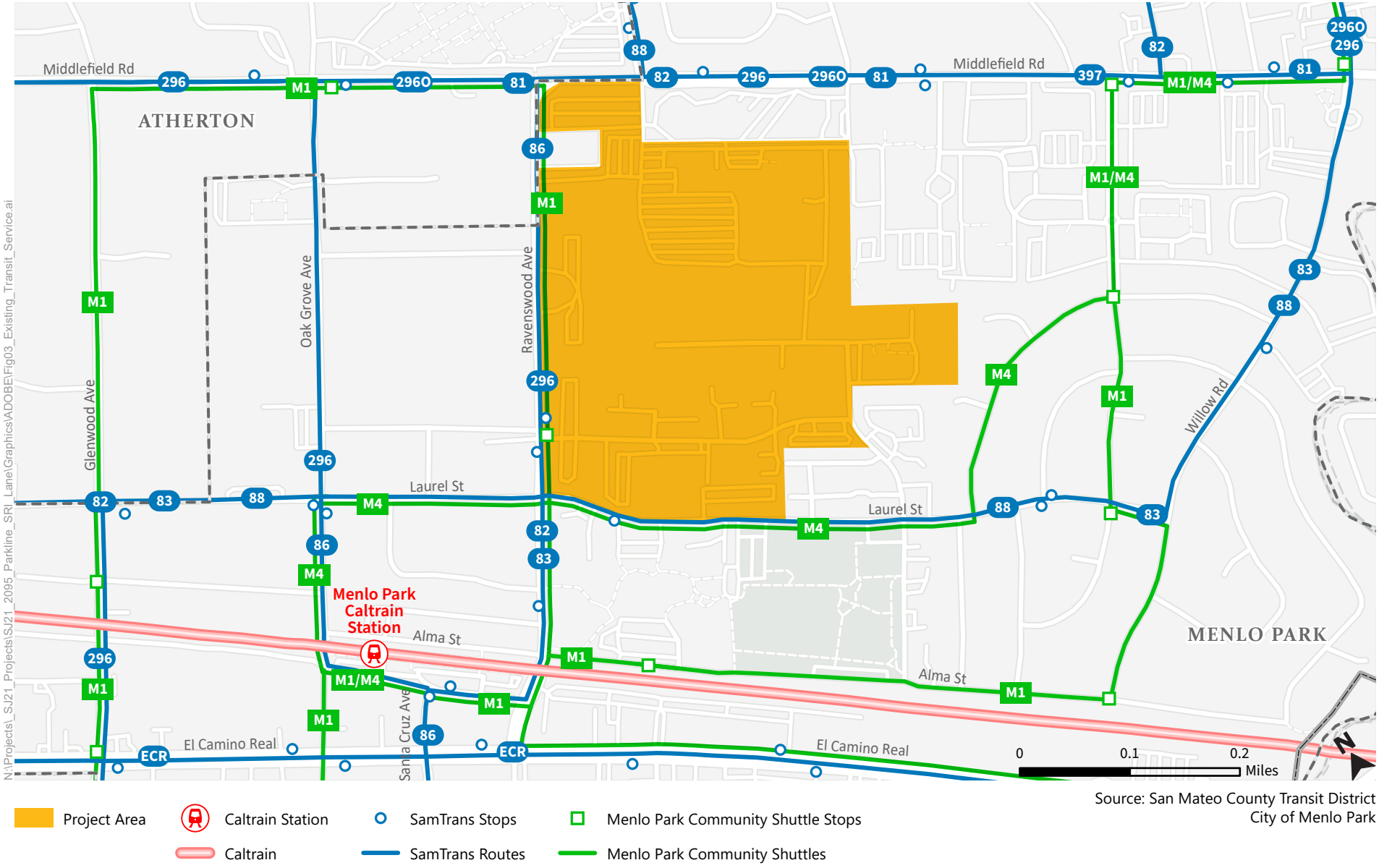
2.1.3 Menlo Park Community Shuttles

The Menlo Park community shuttle service has been in operation since 1989 and is funded through grants from San Mateo City/County Association of Governments, Bay Area Air Quality Management District, and the City of Menlo Park. There are a total of five community shuttles routes: M1 Crosstown Shuttle, M3 Marsh Road Shuttle, M4 Willow Road Shuttle, Menlo Gateway Shuttle, and Shoppers' Shuttle. Three of the shuttles could be utilized by future Parkline residents and workers. With route modifications, M1 Crosstown Shuttle and M4 Willow Road Shuttle could serve Parkline. Residents of Parkline would also have access to the Shopper's Shuttle.

The M1 Crosstown Shuttle route runs between the Belle Haven neighborhood in east Menlo Park to the Menlo Commons/Sharon Height Shopping Center in west Menlo Park. The shuttle circulates through downtown Menlo Park and connects with both the Menlo Park and Palo Alto Caltrain stations. The current route does not directly connect to Parkline. The closest stops are located south and west of Parkline along Linfield Drive and Alma Street.

The M4 Willow Road Shuttle route runs between the Menlo Park Caltrain station and the business parks located along O'Brien Drive. While this shuttle travels on Laurel Street, there are no existing shuttle stops on Parkline frontages. The M4 shuttle schedule operates Monday through Friday to coincide with the peak period Caltrain schedule.

Shoppers' Shuttle is an on-demand, door-to-door service that provides trips to multiple destinations in Menlo Park, Palo Alto, and Redwood City. Reservation-only service is only available on limited number of days for a limited number of hours.



Source: San Mateo County Transit District
City of Menlo Park

Figure 3

Existing Transit Service

Table 1: Nearby Transit Services

Route	From	To	Weekdays		Weekends		Notes
			Operating Hours	Peak Headway (minutes)	Operating Hours	Headway (min)	
Caltrain Service							
Northbound	San José	San Francisco	4:28 am- 11:12 pm	24	7:15 am- 10:28 pm	60	
Southbound	San Francisco	San José	4:51 am – 12:05 am	24	7:47 am- 11:13 pm	60	
SamTrans							
ECR NB	Palo Alto	Daly City	4:05 am – 11:50 pm	15	4:50 am- 11:50 pm	20	
ECR SB	Daly City	Palo Alto	4:40 am – 12:15 am	15- 20	5:40 am- 12:40 am	20	
Route 397	Drumm/Clay	Palo Alto Transit Center	3:30am- 6:15 am	60	3:30am- 6:15 am	60	N/A during mid-day or evenings
Route 296	Bayshore/ Donohoe	Redwood City Transit Center	5:15 am- 9:56 pm	15	8:31am – 7:35 pm	30	
Route 82	Bay/Marsh	Hillview Middle School	7:40 am & 3:17 pm	N/A	No Service		School days only
Route 83	Bay/Menlo Oaks	Hillview Middle School	7:28 am & 3:18 pm	N/A	No Service		School days only
Route 88	Bay/Marsh	Encinal School	2:05 pm & 3:15 pm	N/A	No Service		School days only
Community Shuttles			***Morning***	***Afternoon***			
M1- Crosstown to/from Sharon Heights	Terminal and Del Norte	Menlo Commons	8:15 am- 10:49 am	12:07 pm – 3:27 pm	No Service		Free of Cost
M1- Crosstown to/from Belle Haven	Sharon Hts. Shopping Center	Terminal and Del Norte	9:00 am- 10:01 am	12:55 pm – 4:23 pm	No Service		Free of Cost
M4- Willow Road Shuttle	Menlo Park Caltrain Station	Menlo Park Caltrain Station	6:41 am- 9:47 am	3:58 pm- 5:21 pm	No Service		Free of Cost
Shoppers' Shuttle	Home	Multiple facilities and back to home	Tue & Wed 9:30 am- 1:30 pm	N/A	Only on Saturdays 9:30 am- 1:30 pm		Free of Cost

Source: Fehr & Peers, August 2023.

2.1.4 Paratransit

SamTrans paratransit service is provided to eligible individuals with disabilities who are prevented from using regular transit services. SamTrans provides paratransit service using Redi-Wheels on the bayside of the county and RediCoast on the coast side. Parkline residents and employees that live within San Mateo County would be eligible to use this ADA paratransit service to reach nearby destinations within the county.

SamTrans' Peninsula Rides provides seniors and those with accessibility needs in San Mateo County with the resources to stay mobile and get around the community. There are other services specifically for seniors besides public transit or shuttles: Senior Center Services transport seniors to and from their homes to designated senior centers; and there are many other community services at a reasonable cost for people who require extra assistance.

2.2 Existing Pedestrian and Bicycle Facilities

2.2.1 Existing Pedestrian Facilities

Parkline's perimeter is served by a range of pedestrian facilities near including sidewalks, crosswalks, curb ramps, and pedestrian signals. There are continuous sidewalks on both sides of the roadways on Laurel Street and Middlefield Road along Parkline frontages. On Ravenswood Avenue there is a continuous sidewalk on the south side of the roadway. On the north side of Ravenswood Avenue, a sidewalk extends between Laurel Street and Marcussen Drive; however, there is no sidewalk between Marcussen Drive and Middlefield Road. This section of roadway is within the Town of Atherton, which does not provide sidewalks on most of its streets.

Table 2 summarizes locations of existing pedestrian crosswalks at the intersections adjacent to Parkline. Crosswalks are located at the signalized intersections adjoining the site. The intersection of Middlefield Road/Ravenswood Avenue does not have a crosswalk on the north approach due to the signal phasing. In addition, there are no existing sidewalks on Ravenswood Avenue and Middlefield Road on the northwest corner of the intersection (within the Town of Atherton). The intersections of Pine Street/Ravenswood Avenue and Ringwood Avenue/Ravenswood Avenue have crosswalks on all approaches.

There are no crosswalks at the two of the stop-sign controlled intersections: Pine Street/Ravenswood Avenue and Marcussen Drive/Ravenswood Avenue. At the stop-sign controlled intersection of Seminary Drive/Middlefield Road there is only one crosswalk, on the east approach on Seminary Drive.

The intersection of Alma Street/Ravenswood Avenue provides access to the Menlo Park Caltrain Station. There are crosswalks on three of the approaches. On the east approach on Ravenswood there is a high-visibility crosswalk with a pedestrian activated flashing beacon.

Table 2: Existing Pedestrian Crosswalk Locations

Intersection	Intersection Control	North Approach	East Approach	South Approach	West Approach
Laurel Street & Ravenswood Avenue	Signal	**Yes**	**Yes**	**Yes**	**Yes**
Pine Street & Ravenswood Avenue	Side Street Stop Sign	No	No	No	No
Marcussen Drive & Ravenswood Avenue	Side Street Stop Sign	No	No	No	No
Middlefield Road & Ravenswood Avenue[1]	Signal	No	NA	**Yes**	**Yes**
Middlefield Road & Ringwood Avenue[1]	Signal	**Yes**	**Yes**	**Yes**	**Yes**
Middlefield Road & Seminary Drive	Side Street Stop Sign	No	**Yes**	No	No
Alma Street & Ravenswood Avenue[2]	Side Street Stop Sign	**Yes**	**Yes**	**Yes**	No

1 – Designated school crosswalks with yellow striping.
2 – The Alma Street & Ravenswood Avenue crosswalks provide access to the Meno Park Caltrain Station.
NA – Not applicable.
Source: Fehr & Peers, August 2023.

There are no existing mid-block crosswalks on the perimeter or the site. On Ravenswood there are no mid-block crosswalks between Laurel Street and Middlefield Road. On Middlefield Road there are no mid-block crosswalks between Ringwood Avenue and Linfield Avenue. On Laurel Street there are no mid-block crosswalks between Ravenswood Avenue and Burgess Drive.

Planned Pedestrian Improvements

The City of Menlo Park Transportation Master Plan, adopted by the Menlo Park City Council on November 17, 2020, establishes a detailed vision, sets goals and performance metrics for network performance, and outlines an implementation strategy for improvements to be implemented locally and for local contributions towards regional improvements. Many of the improvements identified in the Transportation Master Plan are focused on enhancing access to Menlo-Atherton High School.

The Transportation Master Plan identifies a range of planned pedestrian and bicycle improvements within the City, including several Tier 1 pedestrian and bicycle improvements near Parkline, most of which are planned along Middlefield Road. The key pedestrian projects surrounding Parkline include the following:

- *TMP #63 – Middlefield Road & Ravenswood Avenue* – Remove eastbound Ravenswood Avenue channelized right-turn lane, install right-turn overlap phase, modify signal timing, install crosswalk and cross-bike markings on north Middlefield Road leg, install bike signal. Construct "jughandle" bicycle left-turn on east side of Middlefield Road to allow bicycle left-turns onto Ravenswood

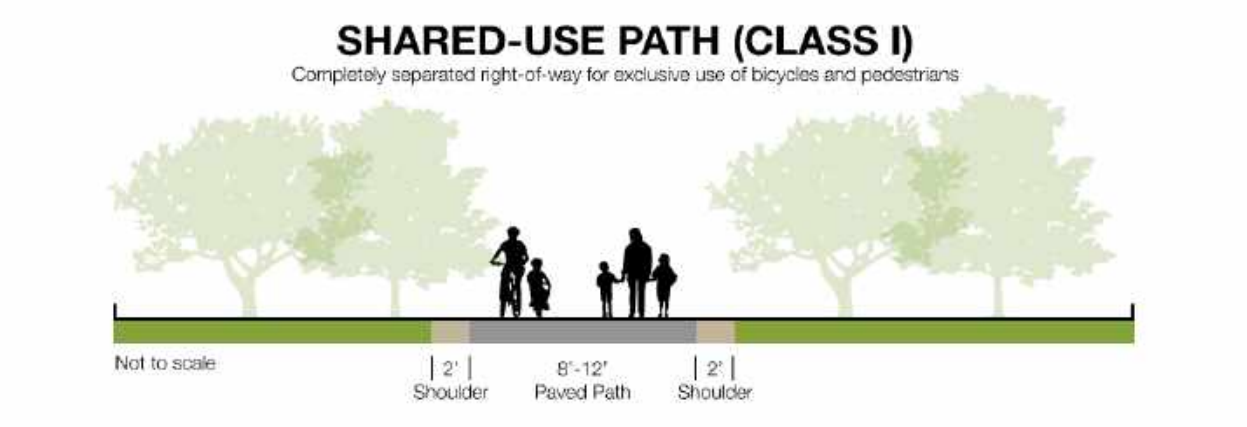
Avenue. Install "bicycle leaning rail" with push button for bicycles to initiate crossing phase on "jughandle" left-turn.

- *TMP #64 – Middlefield Road & Ringwood Avenue* – Remove southbound Middlefield Road channelized right turn. Reconstruct curb ramp and reduce curb radius on northwest corner. Replace crosswalks on north and west legs. Install two-stage left-turn queue boxes for cyclists traveling from Middlefield Road to Ringwood Avenue.
- *TMP #65 – Middlefield Road & Lindfield Drive-Santa Monica Avenue* – Install High Intensity Activated Crosswalk (HAWK) or traffic signal with emergency pre-emption on Middlefield Road at Linfield Drive/Santa Monica Avenue. Install "Keep Clear" striping at Menlo Fire Protection District Station No. 1. Close sidewalk/pathway gap on eastern side of Middlefield Road between Linfield Drive and Santa Monica Avenue. Coordinate with Menlo Fire Protection District.

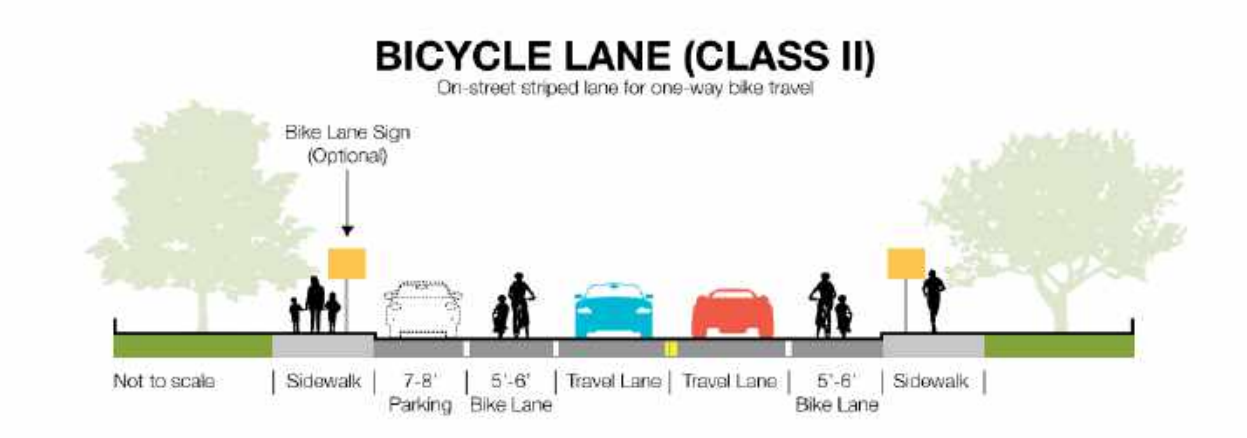
2.2.2 Existing and Proposed Bicycle Facilities

The California Department of Transportation (Caltrans) recognizes four classifications of bicycle facilities:

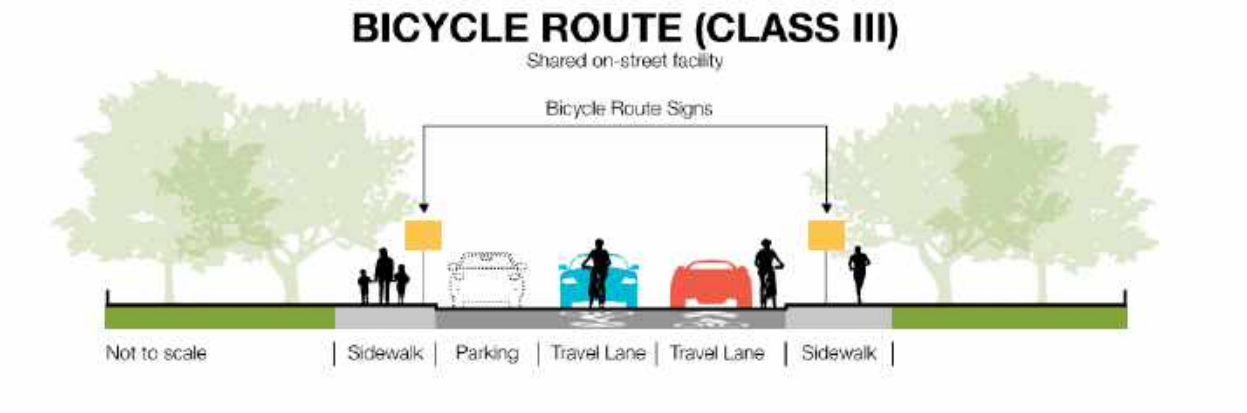
- **Class I Shared-Use Path**, commonly referred to as a Bikeway or Bike Path, is a facility separated from automobile traffic for the exclusive use of bicyclists. Class I facilities can be designed to accommodate other modes of transportation, including pedestrians and equestrians, in which case they are referred to as shared use paths.



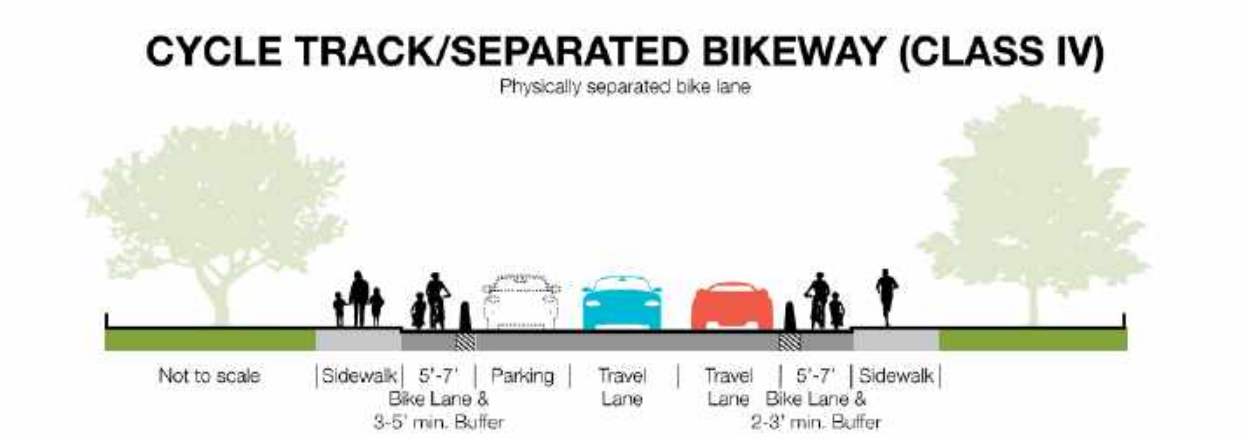
- **Class II Bicycle Lane** is a dedicated facility for bicyclists immediately adjacent to automobile traffic. Class II facilities are identified with striping, pavement markings, and signage, and can be modified with a painted buffer to become a buffered bicycle lane (Class II)



- **Class III Bicycle Route** is an on-street route where bicyclists and automobiles share the road. They are identified with pavement markings and signage and are typically assigned to low-volume and/or low-speed streets.



- **Class IV Cycle Track or Separated Bikeway**, commonly referred to as a protected bicycle lane, is a facility that combines elements of Class I and Class II facilities. They offer an exclusive bicycle route immediately adjacent to a roadway like a Class II facility but provide physical separation from traffic with plastic delineators, raised curb, parked automobiles, or other treatments.



As shown in **Figure 4**, there are existing Class II and Class IV bicycle facilities on the roadways bounding Parkline. Ravenswood Avenue has Class IV separated bicycle lanes between Laurel Street and Middlefield Road. Laurel Street and Middlefield Road both have Class II bicycle lanes. The bicycle lanes on Laurel extend from Burgess Drive in the south to Encinal Avenue in the north. The bicycle lanes on Middlefield Road extend from the Menlo Park city limits in the south into the City of Redwood City in the north (passing through the Town of Atherton).

Planned Bicycle Improvements

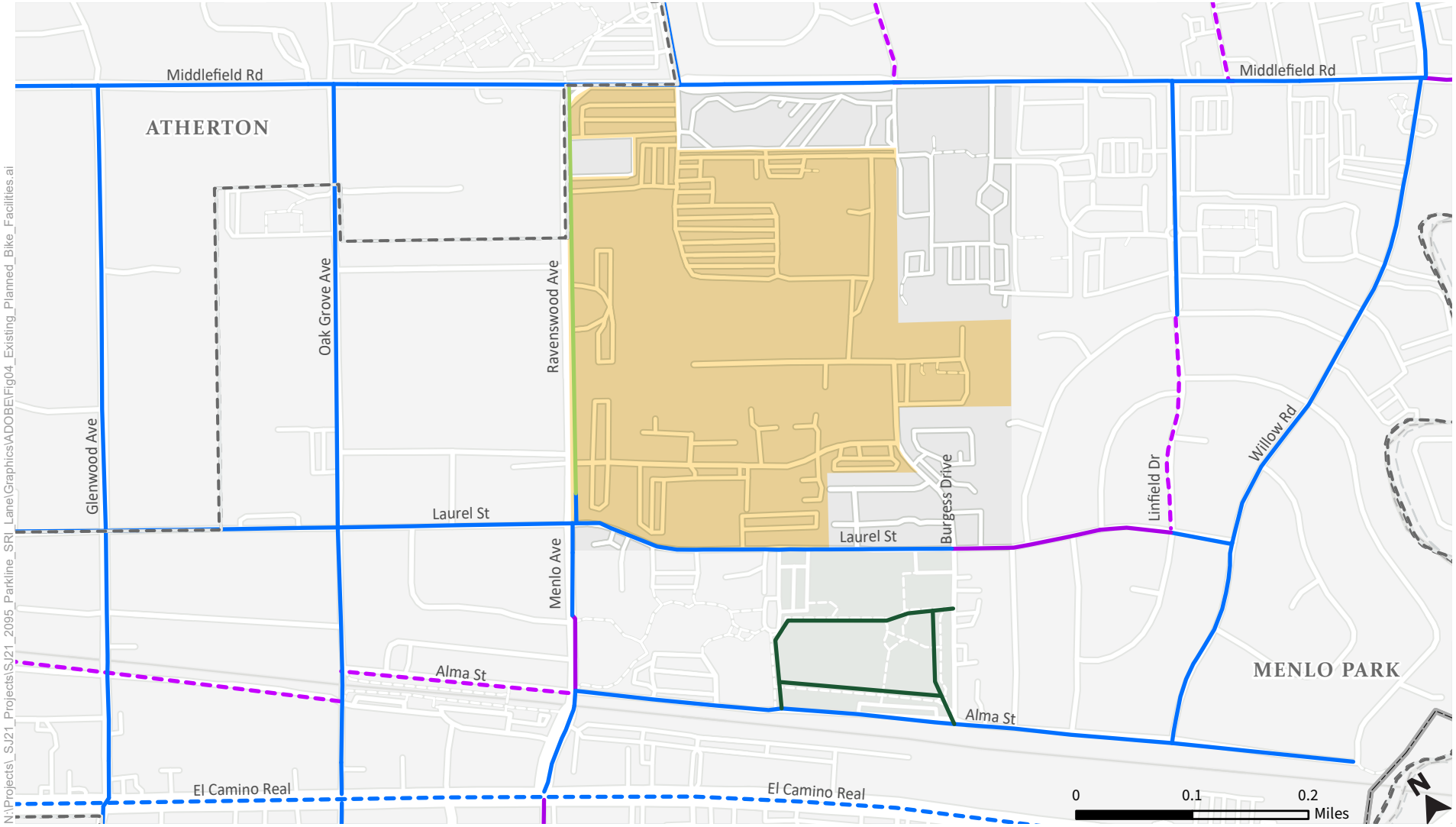
As also shown in **Figure 4**, there are four Transportation Master Plan Tier 1 bicycle improvements planned near Parkline. (Note that **Figure 4** shows only planned bicycle improvements as included in the Transportation Master Plan; Parkline proposes additional bicycle improvements, which are further shown in **Figure 5**.) One of the planned improvements was recently implemented by the City of Menlo Park:

- *TMP #74 – Ravenswood Avenue & Laurel Street* – Remove parking south of Ravenswood Avenue on west side of Laurel Street for approximately 150 feet and shift northbound lanes to establish a Class II bicycle lane. Widen and modify eastbound Ravenswood Avenue to shared thru-left lane and a right turn lane. Upgrade existing crosswalks to high-visibility. Modify southbound Laurel Street to a left-turn lane and a shared thru-right lane. Maintain existing Class II bicycle lanes. Remove parking on west side of Laurel Street north of Ravenswood Avenue for approximately 100 feet.

The other planned improvements that have not been implemented by the City of Menlo Park are:

- *TMP #75 – Laurel Street from Burgess Drive to Willow Road – Establish Class II bicycle lanes (requires removal of parking on both sides of the street).*

- *TMP #79 – Alma Street from Ravenswood Avenue to Burgess Drive – Install sidewalk on the east side of Alma Street to connect to Burgess Park path. Upgrade crosswalks to high-visibility.*



Source: City of Menlo Park Transportation Master Plan (2020)

Project Area

Existing Bike Facilities
- Class I Bike Path
- Class II Bike Lane
- Class III Bike Route
- Class IV Separated Bikeway

Planned Bike Facilities
- Class II Bike Lane
- Class III Bike Route

♦ *Bicycle & pedestrian facilities proposed by Parkline project are shown on Figure 5*

Figure 4

Existing and Planned Regional Bicycle Facilities

- *TMP #81 – Middle Avenue Caltrain Crossing – Construct pedestrian and bicycle crossing at El Camino Real/Middle Avenue intersection. Connect to future plaza, to be funded and constructed via private development (Middle Plaza). Install pedestrian crossing improvements across Alma Street from Caltrain Crossing to Burgess Park.*

2.2.3 Existing Roadway Network

The roadway network near Parkline consists of local and state facilities. As shown in **Figure 1**, direct access to the site is via seven existing driveways located on Ravenswood Avenue, Middlefield Avenue, and Laurel Street. There are four driveways located on Ravenswood Avenue, one driveway on Middlefield Road, and two driveways on Laurel Street. The following sections describe roadway connections between the site and local and regional networks.

US 101 is a north-south freeway located north of Parkline with four to five travel lanes in each direction. One travel lane in each direction is designated as an express (toll) lane that high occupancy (HOV) vehicles can use for free or a reduced toll. Solo drivers can pay a toll to use the lane. US 101 extends from San Francisco to Gilroy in the Bay Area. Access to Parkline from US 101 is via Willow Road or Marsh Road.

Willow Road is an east-west roadway that extends from the Bayfront Expressway in the east to Alma Street in the west. Willow Road has a four-lane cross-section between Bayfront Expressway and US 101, and a two-lane cross-section from US 101 to Alma Street. Access to Parkline from Willow Road is via Middlefield Road.

Marsh Road is an east-west roadway that extends from Bayfront Expressway in the east to Middlefield Road in the west. Marsh Road is four- to six-lanes between Bayfront Expressway and Bay Road. Marsh Road becomes a two-lane road west of Bay Road, extending to Middlefield Road.

Middlefield Avenue is a north-south roadway that runs from Palo Alto to Redwood City. Middlefield Road is a two- to four-lane road that extends from the Menlo Park city limits in the south into the City of Redwood City in the north (traversing the Town of Atheron). Most of Middlefield Road is a two-lane roadway; however, the roadway widens to four lanes at key intersections including Ringwood Avenue, Linfield Drive, and Willow Road.

Ravenswood Avenue is an east-west roadway on the north side of Parkline extending from Middlefield Road into downtown Menlo Park. It is a two-lane road from Middlefield Road to the Caltrain crossing widening to four-lanes at El Camino Real.

Laurel Street is a north-south two-lane roadway that extends from Willow Road in the south to Encinal Avenue in the north. Laurel Street is the western frontage of Parkline. The section of Laurel between Willow Road and Ravenswood Road has traffic calming devices installed to reduce traffic volumes in the residential areas.

Ringwood Avenue is an east-west two-lane road that extends from Bay Road to Middlefield Road. The western approach of the Ringwood Avenue and Middlefield Road intersection is an existing site entrance.

El Camino Real (State Highway 82) is a north-south arterial that extends from San José in the south to San Francisco in the north. El Camino Real is four- to six-lanes and passes through Menlo Park. El Camino Real is part of the state highway system; therefore, El Camino Real is maintained and managed by the California Department of Transportation (Caltrans).

Planned Roadway Improvements

Most of the Menlo Park Transportation Master Plan Tier 1 improvements are focused on pedestrian, bicycle, and local roadway safety improvements. However, there is one major roadway improvement planned near Parkline: the Caltrain Grade Separation project. The City of Menlo Park is working with the San Mateo County Transportation Authority on funding for the design and environmental phase. The Menlo Park grade separation project is a pipeline project identified within the Measure A grade separation program. The City is working with Caltrain on an agreement to pursue these design and environmental review phases of work, which will be led by Caltrain in coordination with the City.

3. TDM Measures and Strategies

3.1 Overview of TDM Strategies

There are numerous TDM strategies that can encourage residents and workers to use modes of transportation other than driving alone and, therefore, reduce the vehicle miles traveled (VMT) and parking demand generated by a development. TDM strategies fall into two categories: physical design features and operational TDM programs.

Physical design features encourage users to reduce the amount of driving they do by making alternatives more attractive. These strategies can include combining residential, retail and office uses, building design features such as showers and changing areas for bicycle and pedestrian commuters, and providing pedestrian and bicycle facilities.

Operational TDM programs are offered by the landowner, employers (tenants), and residential building managers on an ongoing basis to reduce vehicle trips. Cities often require land owners to pass down TDM requirements to property managers and office tenants through lease agreements.

TDM programs promote the use of transit, carpooling, vanpooling, biking, and walking to reduce vehicle trips, complementing physical design features.

Each TDM strategy has an associated range of effectiveness in reducing vehicle trips; combined, they provide an overall range of effectiveness. The overall effectiveness is not simply additive when strategies are combined since some programs target the same users and/or use similar approaches to affect user behavior.

3.2 Parkline TDM Requirements

There is no specific Citywide or other TDM ordinance that is directly applicable to Parkline; however, as a transit-oriented development, Parkline proposes to incorporate a robust TDM Plan to reduce vehicle trips and, thereby, reduce vehicle miles traveled (VMT). As further detailed below, Parkline will incorporate TDM measures yielding a 25% reduction from the ITE standard rates for Project-related residential trips and 28% reduction from the ITE standard rates for Project-related general office and research and development (R&D) trips, which exceeds C/CAG's requirements and is required in order to ensure a less than significant VMT impact.

3.2.1 Trip Reduction Targets

The trip reduction targets/caps for future TDM Plan monitoring will be calculated based on the land uses approved for the Parkline development. The City of Menlo Park has a practice of applying TDM trip reductions after considering any internal trip reductions for mixed use developments (i.e., Menlo Park does not allow for TDM reductions based on land use decisions such as proposing mixed use developments which reduce trips due to internal capture). Therefore, Parkline will be required to have an effective 28% trip reduction for residential trips and 31% for office/R&D trips after accounting for trip internalization, due to the mixed-use

nature of the Project (office and residential uses). The estimated trip reduction due to internal capture is approximately 3%.

3.2.2 Regulatory Framework for Parkline TDM Strategy

There is no specific City of Menlo Park TDM ordinance applicable to Parkline; as such, this TDM Plan has been developed consistent with the *Transportation Demand Management (TDM) Policy* as set forth by the County and City Association of Governments (C/CAG). C/CAG is the regional transportation planning agency for San Mateo County. C/CAG is responsible for overseeing the San Mateo Congestion Management Program (CMP), which includes the Land Use Impact Analysis Program Policy, also known as the "TDM Policy." As of January 1, 2022, *C/CAG's Transportation Demand Management (TDM) Policy* requires that local jurisdictions in San Mateo County, including the City of Menlo Park, notify C/CAG of any new development project that is estimated to generate at least 100 Average Daily Trips (ADT). Jurisdictions may apply for exemption if their local TDM policy equals or exceeds that of C/CAG's.

The City of Menlo Park has not updated its local TDM guidelines since C/CAG updated its countywide policy. However, our understanding is that the City of Menlo Park intends to follow the recommended process in the updated C/CAG Countywide TDM Policy (January 2022) when evaluating Parkline's TDM Plan. As such, the TDM Plan for Parkline utilizes C/CAG's TDM Policy guidelines.

3.2.3 Commute.org Certification

C/CAG has teamed with Commute.org to establish a *Certified Development Program* to certify TDM plans. The *Certified Development Program* is designed to provide developers with projects in San Mateo County with a formal certification of their active participation in Commute.org programs and services. Generally, active participation may be a requirement for developments that are subject to the C/CAG Countywide TDM Policy and may also be a TDM requirement imposed on developers by jurisdictions that are not subject to the C/CAG policy. The goal of the *Certified Development Program* is to provide developers access to a set of TDM programs and services that can be integrated into other tools they will use to reduce VMT and trip counts to new commercial, residential, or mixed-use developments in San Mateo County.

Parkline intends to participate in the Commute.org programs and seek certification through the *Certified Development Program*. The Commute.org TDM certification process includes the following steps:

- Register with Commute.org and provide the required information.
- Consult with Commute.org staff to verify the certification process and requirements for active participation.
- Submit a signed Letter of Commitment confirming that the developer and/or their successor(s) will be active participants with Commute.org.
- Provide a copy of the C/CAG TDM Policy Checklist or equivalent documentation from local jurisdiction (if applicable).
- Receive a Pre-Certification Letter from Commute.org that confirms registration and commitment to active participation. Commute.org will send a letter to the developer and appropriate jurisdiction contact. This letter must be submitted to C/CAG along with the TDM Checklist (if applicable).

- Achieve certification status within six months of receiving Certificate of Occupancy. Requires completion of Commute.org program training and submittal of initial TDM Survey.
- Maintain annual certification status with Commute.org by complying with the requirements for active participation.

3.3 Proposed TDM Measures for Parkline

Table 3 provides a comprehensive list of TDM strategies that could be used by Parkline to reduce vehicle trips and, thereby, reduce vehicle miles traveled (VMT). Because Parkline includes both residential and commercial components, the list of TDM strategies includes certain measures that would apply to just the residential or commercial (office / R&D) component, and certain strategies that would apply to both.

Table 3 includes a strategy name and description followed by five columns. The columns indicate the following:

- **C/CAG** – Whether the strategy is included in the County and City Association of Governments (C/CAG) check list used by Commute.org to certify development projects in San Mateo. The City of Menlo Park requires new development projects to obtain Commute.org certification.
- **VMT Reduction Potential** – The range of VMT reduction that a given TDM strategy may achieve based on data from the *Handbook for Analysis Greenhouse Gas Emission Reductions* (California Air Pollution Control Officers Association, 2021) and other published sources.
- **Residential TDM** – Whether the physical design feature or TDM strategy is applicable to Parkline's residential component.
- **Office/R&D TDM** – Whether the physical design feature or TDM strategy is applicable to Parkline's office/R&D component.
- **Owner/Property Management** – Whether the office TDM feature, or strategy is implemented by the property owner or property management. Ongoing residential and commercial TDM programs are typically enforced through lease agreements and managed by property management, often through an assigned TDM Coordinator.
- **Office/R&D Tenant** – Whether the office TDM feature, or strategy is implemented by the office/R&D tenant. These are typically strategies that require direct coordination with the employee such as payroll deductions.

The proposed TDM measures in **Table 3** represent a toolbox of options that can be used by Parkline to meet the required trip reductions for residential and office/R&D uses. As a general matter, TDM plans need to be flexible to meet the changing needs and travel behavior of the end users. Programs that start out reducing trips may grow ineffective and should be replaced with other programs. In addition, new TDM programs may arise due to changes in technologies, innovations in travel modes, or public policies that support alternative modes of travel. Therefore, the Parkline TDM plan should be considered a living document that can be updated as needed.

Table 3: Proposed TDM Measures for Parkline

TDM Measure	Description	C/CAG	VMT Reduction Potential[1]	Residential TDM	Office/R&D TDM	
					Owner/Property Management[2]	Tenants
Bicycle and Pedestrian						
Provide bicycle parking (short-term, on-sidewalk or similar)	Provide traditional bike racks designed for short-term parking, in a visible publicly accessible space.	✓	0.1% – 1.6%		✓	
Provide on-site bicycle maintenance services	Include dedicated space for a bicycle repair shop or agree to provide concierge service for individuals to drop off bicycles for repairs and pick them up later.	✓	Unknown		✓	
Fund bicycle lanes / expansion of bicycle network	Construct or improve a bicycle lane facility (Class I, II, III, or IV) that connects to a larger existing bikeway network. This encourages mode shift from parallel roadways to bicycles, displacing VMT. • Class I – Bicycle & pedestrian path parallel to Ravenswood Av extending from Laurel St to Middlefield Rd (at Ringwood) • Class IV – Cycle Track along project frontage on Laurel St from Ravenswood to property line • Class I – Bicycle & pedestrian path connecting Burgess Dr and Middlefield Rd on east side of the property • Class I – Bicycle & pedestrian path connecting between Laurel St and internal circulation roadway • Class II or III – Internal circulation (loop) will included either Class II (bike lanes) or III (sharrows) to accommodate bicycles	✓	0.2% – 0.8%	✓	✓	
Provide bicycle parking (long-term, secure)	Provide secure bicycle parking in either a dedicated room, via bicycle lockers, or a bike station incorporated into the project.	✓	0.1% – 1.6%	✓	✓	
Provide on-site bicycle repair station	Provide a bicycle repair station that includes basic tools and space for common repair tasks. This may include a stand, air pump, tire lever, wrenches, and other common bicycle maintenance tools.	✓	0.1% – 1.6%	✓	✓	
Provide showers and lockers	Provide space for active transportation users to shower, change, and store any equipment they use during their commute.	✓	0.1% – 2.8%		✓	

TDM Measure	Description	C/CAG	VMT Reduction Potential[1]	Residential TDM	Office/R&D TDM	
					Owner/Property Management[2]	Tenants
Provide pedestrian network improvements	Improve pedestrian spaces both within the project and on roadways approaching the project. Improvements may include providing sidewalks on both sides of the street, incorporating ADA-compliant improvements, and providing sidewalk amenities such as trees, plants, and benches, and otherwise improving the pedestrian experience.	✓	0.5% to 6.4%	✓	✓	
Provide traffic calming measures	Roadways will be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.		0.25 – 1.0%	✓	✓	
Enhanced Program: Maintain fleet of bicycles	Maintain a fleet of bicycles for use by project residents or employees only. While like bike share, this system is not open to the public, and may be more informal; for instance, a residential development with a shared bike room that includes a few building-owned bicycles.		0.02%	✓	✓	
Land Use and Design						
Integrate affordable and below-market-rate housing	Incorporate affordable housing into the development program. Affordable housing can be defined as housing affordable to households earning less than 80% of the area median income. Affordable or below-market-rate housing can comprise anywhere from a small percentage to 100% of total residential units in a project. Because lower income households tend to generate less VMT per person, this may reduce vehicle trips.		Up to 28.6% (relative to market rate single family housing)	✓		
Locate project near bike path/bike lane or another non-auto corridor	Locate project on a roadway that has existing high-quality bicycle and pedestrian infrastructure, such as bike lanes (class I, II, or IV). Project may also be oriented toward a dedicated bus facility (such as BRT), light rail line or commuter rail; in this instance, orientation means that the site's primary and easiest form of access should be from the transit corridor, and that the transit corridor should not have competing automotive traffic.		0.25 – 0.5%	✓	✓	

TDM Measure	Description	C/CAG	VMT Reduction Potential[1]	Residential TDM	Office/R&D TDM	
					Owner/Property Management[2]	Tenants
Provide delivery-supportive amenities	Designate a central package room or package area where deliveries can be safely kept until picked up by a resident or employee. This helps to reduce excessive driving by delivery vehicles and may help residents to be zero car households.	✓	Unknown	✓		
Provide multimodal wayfinding signage	Indicate via prominent and well-designed signage the best walking and bicycling routes to major destinations, distances and walk/bike times to those destinations, locations of transit stops (including all relevant bus, rail, or shuttle services) and high-level information on those transit services.		Unknown	✓	✓	
Improve design of development	The project will include improved design elements to enhance walkability and connectivity. Improved street network characteristics within a neighborhood include street accessibility, usually measured in terms of average block size, proportion of four-way intersections, or number of intersections per square mile.	✓	3.0 – 21.3%	✓	✓	
Shared Mobility						
Implement a car-sharing program	Deploy car-share vehicles in the project area / community. Carshare vehicles are automobiles that can be rented on a short-term basis and may be either point-to-point or roundtrip. Access to carshare vehicles can help reduce the need for a private car and can result in decreased vehicle ownership.	✓	0.15% – 0.7%	✓	✓	
Enhanced: Provide bicycle and/or scooter sharing program subsidy	Fully or partially pay for tenants'/employees'/students' yearly membership fee and insurance associated with bike-sharing.	✓	Unknown	✓	✓	✓
Ridesharing						
Provide carpool subsidies	Provide subsidies in the form of cash or gas cards to individuals carpooling to/from work.	✓	0.0 – 8.0%		✓	✓
Preferential Carpool Parking Spaces	Provide carpool parking spaces near building entrances to incentivize carpool use.		0.0 – 8.0%		✓	✓

TDM Measure	Description	C/CAG	VMT Reduction Potential[1]	Residential TDM	Office/R&D TDM	
					Owner/Property Management[2]	Tenants
Parking						
Unbundle parking costs.	For residential developments, require that parking spaces be paid for separately from the primary mortgage/HOA dues/rent. This effectively reduces housing costs for households with no cars / fewer cars		2.6 – 15.7%	✓		
Transit and Shuttle						
Pre-Tax Commuter Benefits *(tenant or employer action)*	Provide employees the opportunity to enroll in WageWorks or other services to help with pre-tax commuter savings. This strategy allows employees to deduct monthly transit passes or other amounts using pre-tax dollars. This can help to lower payroll taxes and allows employees to save on transit costs.	✓	0% – 1.5%			✓
Promote real-time transportation apps	Provide information on transportation apps that residents and workers can use to find out information on schedules and departure times to facilitate trip planning		Unknown	✓	✓	✓
Provide subsidies for transit riders	Provide subsidies in the form of cash, transit passes, or contributions to a regional fare card to transit riders. An employer typically implements this program.	✓	Up to 20%	✓	✓	
Provide shuttle services *(last mile service to Caltrain or midday services to downtown Menlo Park)*	Provide a publicly available shuttle service between a regional transit facility and employment, residential, or shopping centers located 1-5 miles away.	✓	0.1% to 8.2%	✓	✓	
Marketing						
Provide TDM coordinator *(owner, property management, and/or tenants)*	Designate a staff person as the site wide TDM coordinator to develop, monitor, and publicize TDM activities. The site TDM coordinator will work with the designated TDM coordinators identified by building property managers and individual tenants (employers).	✓	Unknown	✓	✓	
Actively Participate in Commute.org or a local Transportation Management Association (TMA)	Participation in a TMA allows all members to benefit from the economies of scale when it comes to mutually funded TDM programs or marketing activities. Programs could include Caltrain shuttles, guaranteed rides home (see below) and transit agency coordination.	✓	Unknown	✓	✓	

TDM Measure	Description	C/CAG	VMT Reduction Potential[1]	Residential TDM	Office/R&D TDM	
					Owner/Property Management[2]	Tenants
Provide guaranteed ride home *(Commute.org provides this service in San Mateo County for a fee)*	Provide free (or reimbursed) taxi, Lyft, or Uber rides home for employees that used transit or carpooling to reach work and must travel home either mid-day due to an emergency, at a time other than their carpool, or after transit service has concluded. This helps address uncertainty for individuals considering using alternative modes.	✓	Unknown		✓	
Provide move-in / new hire packets on transportation options	Provide standardized materials including information on transit routes and schedules, bicycle pathways, available commuter facilities, subsidies, parking cash-out, and any other commuter programs available.		Unknown	✓	✓	
Provide one-on-one trip planning	Offer one-on-one sessions to employees/residents to discuss commute options specific to their commute and provide them with a plan. This may also include information on relevant subsidies or bicycle facilities. Like "intensive targeted marketing program" but typically relies on voluntary sign-up for information sessions.		Unknown		✓	
Provide on-demand ridesharing *(tenant action)*	Provide access to and/or promote an app that allows drivers and potential carpoolers to identify each other on a short term or occasional basis (as compared to traditional carpooling/ridesharing where carpools tend to adhere to a regular schedule)		0.0 – 8.0%			✓
Provide TNC vouchers or discounts for pooled trips only *(tenant action)*	Provide subsidies or credits in popular ride-hailing apps (such as Uber or Lyft) for pooled trips only, encouraging employees or residents to select the pooled option for such trips.	✓	Unknown	✓		✓
Encourage telecommuting and alternative work schedules *(tenant action)*	Allow and encourage employees to telecommute or adopt alternative work schedules. Examples may include working from home a certain share of the time or working a 9/80 or 4/40 work week.	✓	Up to 5.5%			✓

1 – Range of VMT reduction for the individual program or activity based on the *Handbook for Analysis Greenhouse Gas Emission Reductions* (California Air Pollution Control Officers Association, 2021) and other published reach search. Unknown indicates that no value is assigned to the individual strategy; however, these strategies are components that complement other programs and make them more effective.

2 – Owners / Property Managers refers to actions that would be implemented by the property owner and/or property managers. For example, the property owner is responsible for the design features built into the property. Property managers are responsible for implementing programs for their development and collaborating with tenants to implement TDM programs.

Source: Fehr & Peers, August 2023

This TDM Plan will be updated later to include a monitoring plan that demonstrates how Parkline proposes to monitor ongoing compliance and to measure the effectiveness of the office/R&D and residential TDM components.

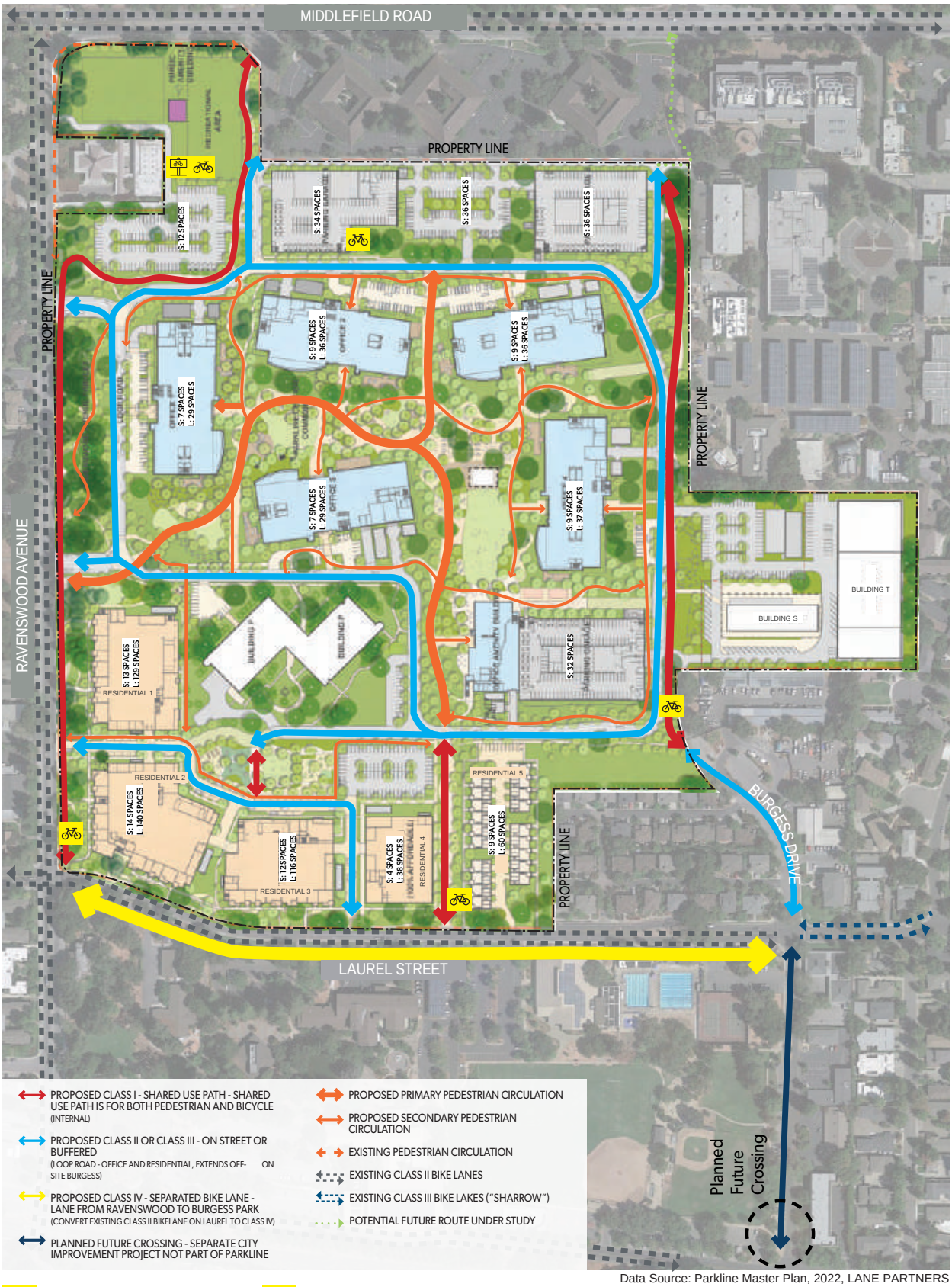
3.3.1 Proposed Parkline Pedestrian and Bicycle Facilities, and Reduced Parking Ratios

Under existing conditions, the Parkline site is currently closed to the public and surrounded by a secured perimeter, thereby limiting bicycle and pedestrian connectivity. The existing bicycle and pedestrian facilities are limited to on-street bicycle lanes and narrow sidewalks along the perimeter of the site's roadway frontages within the public right-of-way. Parkline would eliminate the existing security perimeter and would open the site to the surrounding community by creating accessible and safe multi-modal pathways, allowing bicyclists and pedestrians to circulate throughout the site. These bicycle and pedestrian pathways would be located along the perimeter of Parkline and throughout the interior of the site to create east–west bicycle and pedestrian linkages that would connect through Parkline to Burgess Park, the future Caltrain undercrossing, and the Menlo Park downtown area.

Figure 5 shows the planned pedestrian and bicycle facilities that will be included in Parkline. With the consolidation of the office/R&D space into fewer buildings, the open space created will allow pedestrians and bicyclists to travel throughout the site on a new network of paths and sidewalks. **Figure 5** also shows the location and amount of short-term and long-term bicycle parking, which is designed to meet the City of Menlo Park's bicycle parking requirements, and to meet or exceed the bicycle parking requirement under the Cal Green standards.

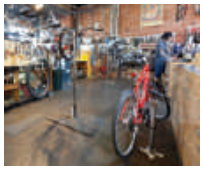
In addition to creating a new internal bicycle network and providing bicycle parking, Parkline proposes to provide five do-it-yourself (DIY) bicycle repair stations and provide staffed bicycle maintenance services on-site. **Figure 5** shows the conceptual locations of these bicycle repair facilities; the final location and design will be determined through the review and approval process. Three of the DIY repair stations are anticipated to be located on the western perimeter of the site where bicyclists enter and exit the internal bicycle network. Another DIY repair station would be located on the eastern side of the site near parking structures. The last DIY repair station would be located adjacent to the bicycle maintenance service center.

With respect to parking, under existing conditions, onsite parking for the SRI International Campus is provided primarily in large surface parking areas, resulting in extensive impervious areas and limited opportunities for landscaping and accessible open space. Parkline would demolish existing surface parking areas, and instead would provide three above-ground parking garages, two one-level below-ground parking garages, podium parking, and limited surface parking to provide parking for all uses. Parkline proposes low parking ratios that are consistent with other transit-oriented projects within the City and reflect Parkline's proximity to the Menlo Park Caltrain station and implementation of this TDM Plan. Reduced parking ratios are well regarded as a key strategy in reducing vehicle trips and resulting VMT.



Data Source: Parkline Master Plan, 2022, LANE PARTNERS

BICYCLE MAINTENANCE SERVICES - QTY. 1



BICYCLE REPAIR STATION - QTY. 5

S SHORT-TERM BICYCLE PARKING (SEE PLAN FOR QUANTITIES)

L LONG-TERM BICYCLE PARKING (SEE PLAN FOR QUANTITIES)

Figure 5

Project Bicycle Facilities

Parkline's parking ratio is one space per multifamily unit; 0.5 space per BMR unit within the dedicated area for the 100% affordable units; and 2 spaces per 1,000 SF for commercial office/R&D uses.[1]

3.3.2 Parkline C/CAG TDM Policy Checklist Compliance

Fehr & Peers evaluated the residential and office/R&D components of Parkline using the appropriate C/CAG TDM Policy Checklist. Based on the size of the residential and office/R&D components, Parkline falls into the following land use categories for purposes of the C/CAG TDM Policy:

- **Residential (Multi-Family) Land Use: Large Project** with average daily trips (ADT) of >500 trips and more than 50 dwelling units.
- **Non-Residential (Office, Industrial, Institutional) Land Use: Large Project** with ADT of >500 trips and more than 50,000 square feet.

Parkline qualifies as a transit oriented development (TOD) since it is located less than one half-mile from high quality transit service (Caltrain). The C/CAG TDM Checklist trip reduction target for TOD projects is 25%.

The estimated trip reduction for Parkline's residential component from the C/CAG TDM Checklist Required and Additional Recommended Measures yielded 30.0%. The estimated trip reduction for Parkline's office/R&D component from the Required and Additional Recommended measures yielded 35.5%. These levels of trip reductions were achieved without the provision of transit passes/subsidies for employees and residents. However, Parkline proposes to provide transit passes or subsidies, therefore, the total reductions would be anticipated to result in further trip reductions of 40.0% and 45.5%, respectively. **Table 4** shows the C/CAG checklist scoring for each of the Parkline components with and without transit passes or subsidies. The completed C/CAG TDM checklists are included in **Appendix A**.

Table 4: C/CAG TDM Checklist Scores

Land Use	Provide Transit Passes	Required Measures	Additional Recommended Measures	Total Reduction	C/CAG Target Reduction
Residential (Multi-Family): Large Project	No	8.5%	21.5%	30.0%	25%
Residential (Multi-Family): Large Project	Yes	18.5%	21.5%	40.0%	25%
Non-Residential (Office): Large Project	No	15.0%	20.5%	35.5%	25%
Non-Residential (Office): Large Project	Yes	25.0%	20.5%	45.5%	25%

Source: Fehr & Peers, August 2023.

[1] For reference, the default parking requirement for the C-1 zoning district is 1 space per 200 SF

4. TDM Monitoring Plan

This section will be added later.

Appendix A.
C/CAG TDM Checklists

Parkline C/CAG Large Residential TDM Checklist

C/CAG TDM Checklist

ccagtdm.org

Residential (Multi-Family) Land Use: Large Project

500+ ADT; ~50+ Units

About this Form

Any new development project anticipated to generate at least 100 average daily trips is subject to the C/CAG TDM Policy and must complete a TDM Checklist and implement associated measures to mitigate traffic impacts. Read more at ccagtdm.org

Questions?
support@ccagtdm.org

A Applicant Information

Project Address: Parkline Residential Component	Contact First and Last Name:
Parcel Number:	Application Date: D D M M Y Y Y Y
	Contact Phone Address:
Project Jurisdiction: City of Menlo Park	Contact Email Address:

B Trip Reduction Target

Select one option based on your project's distance to high quality transit

Read more about high quality transit at ccagtdm.org/high-quality-transit

Identify your project type

◉ **TOD**	☐ **Transit Proximate**	☐ **Non-Transit Proximate**
Less than 1/2-mile from high quality transit service	1/2 to 3 miles from high quality transit service	More than 3 miles from high quality transit service
25% Trip Reduction Required	**35% Trip Reduction Required**	**35% Trip Reduction Required**

C Required Measures

You must select all measures that apply for your project type

Click on each measure's title for more information

	Measure	Project Types	Percentage	Yes
1	**M2 - Orientation, Education, Promotional Programs and/or Materials** Offer new residents an orientation or education program or materials.	ALL	1%	☑
2	**M3 - TDM Coordinator/Contact Person** Provide TDM coordinator/liaison for tenants. May be contracted through 3rd party provider, such as Commute.org.	ALL	0.5%	☑
3	**M4 - Actively Participate in Commute.org or Transportation Management Association (TMA) Equivalent** Obtain certification of registration from Commute.org or equivalent TMA incorporation documents. Select only one based on Project Type	TOD & Non-transit Proximate Transit Proximate	5% 15%	☑ ☐
4	**M6 - Transit or Ridesharing Passes/Subsidies** Offer tenants passes or subsidies for monthly public transit or ridesharing costs incurred, equivalent to 30% of value or $50 - whichever is lower.	ALL	10%	☑
5	**M8 - Secure Bicycle Storage** Comply with CalGREEN minimum bicycle parking requirements.	ALL	1%	☑
6	**M9 - Design Streets to Encourage Bike/Ped Access** Design adjacent streets or roadways to facilitate multimodal travel.	ALL	1%	☑
7	**Total from Required Measures** Sum percentages from each selected measure from rows 1-6		18.5%	

Form Continues on Page 2 →

D Additional Recommended

Select enough to meet the trip reduction target from section B

Click on each measure's title for more information

	Measure	Project Types	Percentage	Yes
8	**M5 - Carpool or Vanpool Program** Establish carpool/vanpool program for tenants and register program with Commute.org.	ALL	2%	☐
9	**M10 - Delivery Amenities** Offer delivery amenities, including dedicated receipt and storage areas, to reduce need for multiple trips to conduct similar business.	ALL	1%	☐
10	**M11 - Family-supportive Amenities** On-site secure storage of personal car seats, strollers, cargo bicycles, or other large bicycles. Property owners can also provide shared building equipment, such as shopping carts or cargo bicycles for check out by residents.	ALL	3%	☑
11	**M14 - Paid Parking at Market Rate** Offer hourly/daily parking rates proportional to monthly rate or equivalent to cost of transit fare.	ALL	25%	☐
12	**M15 - Reduced Parking** Provide off-street parking at least 10% below locally-required minimums, or else below the locally-permitted parking maximums. Consideration may be required of potential spillover parking into surrounding areas.	ALL	10%	☐
13	**M17 - Developer TDM Fee/TDM Fund** Voluntary impact fee payment on a per unit or square footage basis, to fund the implementation of TDM programs.	ALL	4%	☐
14	**M18 - Car Share On-Site** Provide on-site car share or vehicle fleets.	ALL	1%	☑
15	**M19 - Land Dedication or Capital Improvements for Transit** Contribute space on, or adjacent to, the project site for transit improvements. Select one or more Bus Pullout Space 1% ☑ Bus Shelter 1% ☑ Visual/Electrical Improvements (i.e., Lighting, Signage) 1% ☑ Other (i.e., Micromobility Parking Zone, TNC Loading Zone) 1% ☑	ALL	4 % Total percentages selected	☑
16	**M20 - Shuttle Program/Shuttle Consortium/Fund Transit Service** Establish a shuttle service to regional transit hubs or commercial centers. Shuttle service should be provided free of charge to employees and guests.	Non-transit Proximate	10%	☐
17	**M21 - Bike/Scooter Share On-Site** Allocate space for bike/scooter share parking.	All	1%	☑
18	**M22 - Active Transportation Subsidies** Offer biking/walking incentives to tenants, such as gift card/product raffles.	All	2%	☑
19	**M23 - Gap Closure** Construct or enhance quality of biking and walking facilities to/from site to existing trails, bikeways, and/or adjacent streets.	All	7%	☑
20	**M24 - Bike Repair Station** Offer on-site bike repair space/tools in visible, secure area.	All	0.5%	☑
21	**M26 - Pedestrian Oriented Uses & Amenities on Ground Floor** Provide on-site, visible amenities to tenants and guests, such as cafes, gyms, childcare, retail.	All	3%	☑
22	**Total from Additional Measures** Sum percentages from each selected measure from rows 8 - 21		21.5 %	

E Project Totals

Percentage from Required Measures (Section C Row 7): 18.5 %

\+ Percentage from Additional Measures (Section D Row 22): 21.5 %

Total Percentage from all Selected Measures (Sum of required and additional measures): 40 %

Trip Reduction Target (Copy from Section B): 25 %

Total Percentage from all selected measures must be greater than or equal to Trip Reduction Target

F Submit Checklist

See ccagtdm.org/submission for how to submit this form.

Questions?

Email Us
support@ccagtdm.org

Visit Our Website
ccagtdm.org

Parkline C/CAG Large Non-Residential TDM Checklist

C/CAG TDM Checklist

ccagtdm.org

Non-Residential (Office, Industrial, Institutional) Land Use: Large Project

500+ ADT; ~50,000+ sq ft

About this Form

Any new development project anticipated to generate at least 100 average daily trips is subject to the C/CAG TDM Policy and must complete a TDM Checklist and implement associated measures to mitigate traffic impacts. Read more at ccagtdm.org

Questions?
support@ccagtdm.org

A Applicant Information

Project Address: Parkline Office Component	Contact First and Last Name:
Parcel Number:	Application Date: D D M M Y Y Y Y
Contact Phone Address:	
Project Jurisdiction: City of Menlo Park	Contact Email Address:

B Trip Reduction Target

Select one option based on your project's distance to high quality transit

Read more about high quality transit at ccagtdm.org/high-quality-transit

Identify your project type

◉ TOD	☐ Transit Proximate	☐ Non-Transit Proximate
Less than 1/2-mile from high quality transit service	1/2 to 3 miles from high quality transit service	More than 3 miles from high quality transit service
25% Trip Reduction Required	**35%** Trip Reduction Required	**35%** Trip Reduction Required

C Required Measures

You must select all measures that apply for your project type

Click on each measure's title for more information

	Measure	Project Types	Percentage	Yes
1	**M1 - Free/Preferential Parking for Carpools** Provide free or preferential parking, including reserved spaces or spaces near an entrance or other desirable location, to incentivize ridesharing.	ALL	1%	☑
2	**M3 - TDM Coordinator/Contact Person** Provide TDM coordinator/liaison for tenants. May be contracted through 3rd party provider, such as Commute.org.	ALL	0.5%	☑
3	**M4 - Actively Participate in Commute.org or Transportation Management Association (TMA) Equivalent** Obtain certification of registration from Commute.org or equivalent TMA incorporation documents. Select only one based on Project Type	TOD & Non-transit Proximate Transit Proximate	6.5% 16.5%	☑ ☐
4	**M5 - Carpool or Vanpool Program** Establish carpool/vanpool program for tenants and register program with Commute.org.	ALL	2%	☑
5	**M6 - Transit or Ridesharing Passes/Subsidies** Offer tenants passes or subsidies for monthly public transit or ridesharing costs incurred, equivalent to 30% of value or $50 - whichever is lower.	ALL	10%	☑
6	**M7 - Pre-Tax Transportation Benefits** Offer option for tenants to participate in a pre-tax transit program to encourage the use of sustainable transportation modes and leverage pre-tax income to pay for commute trip costs.	ALL	1%	☑
7	**M8 - Secure Bicycle Storage** Comply with CalGREEN minimum bicycle parking requirements.	ALL	1%	☑
8	**M9 - Design Streets to Encourage Bike/Ped Access** Design adjacent streets or roadways to facilitate multimodal travel.	ALL	1%	☑
9	**M25 - Showers, Lockers, and Changing Rooms for Cyclists** These amenities serve as end of trip facilities for employees arriving by bike or other active transportation forms.	ALL	2%	☑
10	**Total from Required Measures** Sum percentages from each selected measure from rows 1-9		25%	

Form Continues on Page 2 →

D Additional Recommended

Select enough to meet the trip reduction target from section B

Click on each measure's title for more information

	Measure	Project Types	Percentage	Yes
11	**M12 - Flex Time, Compressed Work Week, Telecommute** Flex time allows employees some flexibility in their daily work schedules. Compressed work week allows employees to work fewer but longer days. Telecommuting functions similarly, allowing employees to work from home rather than the office, reducing vehicle travel on the days they work remotely.	ALL	5%	☑
12	**M14 - Paid Parking at Market Rate** Offer hourly/daily parking rates proportional to monthly rate or equivalent to cost of transit fare.	ALL	25%	☐
13	**M15 - Reduced Parking** Provide off-street parking at least 10% below locally-required minimums, or else below the locally-permitted parking maximums. Consideration may be required of potential spillover parking into surrounding areas.	ALL	10%	☐
14	**M16 - Short-Term Daily Parking** Offer daily or hourly parking rates that are proportional to the monthly rate or approximately the cost of a transit fare.	ALL	2%	☐
15	**M17 - Developer TDM Fee/TDM Fund** Voluntary impact fee payment on a per unit or square footage basis, to fund the implementation of TDM programs.	ALL	4%	☐
16	**M18 - Car Share On-Site** Provide on-site car share or vehicle fleets.	ALL	1%	☑
17	**M19 - Land Dedication or Capital Improvements for Transit** Contribute space on, or adjacent to, the project site for transit improvements. Select one or more Bus Pullout Space 1% ☑ Bus Shelter 1% ☑ Visual/Electrical Improvements (i.e., Lighting, Signage) 1% ☑ Other (i.e., Micromobility Parking Zone, TNC Loading Zone) 1% ☑	ALL	4 % Total percentages selected	☑
18	**M20 - Shuttle Program/Shuttle Consortium/Fund Transit Service** Establish a shuttle service to regional transit hubs or commercial centers. Shuttle service should be provided free of charge to employees and guests.	Non-transit Proximate	10%	☐
19	**M21 - Bike/Scooter Share On-Site** Allocate space for bike/scooter share parking.	All	1%	☐
20	**M22 - Active Transportation Subsidies** Offer biking/walking incentives to tenants, such as gift card/product raffles.	All	2%	☐
21	**M23 - Gap Closure** Construct or enhance quality of biking and walking facilities to/from site to existing trails, bikeways, and/or adjacent streets.	All	7%	☑
22	**M24 - Bike Repair Station** Offer on-site bike repair space/tools in visible, secure area.	All	0.5%	☑
23	**M26 - Pedestrian Oriented Uses & Amenities on Ground Floor** Provide on-site, visible amenities to tenants and guests, such as cafes, gyms, childcare, retail.	All	3%	☑
24		**Total from Additional Measures** Sum percentages from each selected measure from rows 11 - 23	20.5 %	

E Project Totals

Percentage from Required Measures (Section C Row 10): 25 %

\+ Percentage from Additional Measures (Section D Row 24): 20.5 %

Total Percentage from all Selected Measures (Sum of required and additional measures): 45.5 %

Trip Reduction Target (Copy from Section B): 25 %

Total Percentage from all selected measures must be greater than or equal to Trip Reduction Target

F Submit Checklist

See ccagtdm.org/submission for how to submit this form.

Questions?

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ccagtdm.org

Appendix G
Project Variant LOS Analysis

Vistro File: P:\...\Parkline_Vistro_new Variant_AM_2024.03.12.vistro
Report File: P:\...\BPAM.pdf

Scenario 18 Near-Term (2027) Plus Project AM
3/12/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Right	0.826	25.4	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	SWB Left	0.646	22.8	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.659	36.2	D
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.559	18.5	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	SEB Thru	0.841	40.4	D
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NWB Left	0.656	294.8	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	0.770	273.8	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NWB Left	0.876	16.5	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	SB Left	0.709	19.9	B
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	SB Left	0.927	125.3	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	0.903	32.5	C
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Left	0.932	35.8	D
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.424	287.0	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	SWB Right	1.252	144.1	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	1.004	84.9	F
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.894	20.8	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.807	18.4	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	SWB Right	0.885	69.1	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	NEB Thru	0.734	58.5	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.698	22.8	C
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	7.026	47.7	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	SEB Left	0.721	52.3	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.617	34.4	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.516	7.8	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.877	54.0	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.412	6.2	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.591	15.2	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.405	4.8	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.534	10.1	B
39	Santa Cruz Ave/Sand Hill Rd	Signalized	HCM 7th Edition	NWB Right	0.741	47.2	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	WB Left	1.264	92.4	F
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Thru	0.651	17.8	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	SB Left	0.735	36.5	D
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.715	17.5	B
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	NWB Right	0.814	22.0	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.998	14.2	B
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWBL2	0.861	18.5	B
224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.379	10.1	B

250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.318	38.4	E
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Left	0.067	22.2	C
254	Glenwood Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.992	64.9	F
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.757	20.7	C
292	Ravenswood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SEB Left	0.162	59.1	F
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.390	9.4	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SEB Left	0.003	7.9	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.371	9.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	807	1333	217	1006	561
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	807	1333	217	1006	561
Peak Hour Factor	1.0000	0.9550	0.9550	1.0000	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	211	349	54	263	147
Total Analysis Volume [veh/h]	0	845	1396	217	1053	587
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	60	60	0	35	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	55	55	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	53	50	33	33
g / C, Green / Cycle	0.58	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.21	0.39	0.30	0.37
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2334	1995	1268	583
d1, Uniform Delay [s]	9.92	14.34	26.03	28.58
k, delay calibration	0.50	0.50	0.04	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.44	2.07	0.55	37.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.70	0.83	1.01
d, Delay for Lane Group [s/veh]	10.35	16.41	26.58	66.07
Lane Group LOS	B	B	C	F
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.06	9.64	9.92	17.99
50th-Percentile Queue Length [ft/ln]	101.50	241.06	247.88	449.86
95th-Percentile Queue Length [veh/ln]	7.31	14.73	15.08	25.08
95th-Percentile Queue Length [ft/ln]	182.69	368.37	376.98	627.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.35	16.41	0.00	26.58	66.07
Movement LOS		B	B		C	F
d_A, Approach Delay [s/veh]	10.35		16.41		40.71	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	25.36					
Intersection LOS	C					
Intersection V/C	0.826					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.50	0.00	32.14
l_p,int, Pedestrian LOS Score for Intersectio	2.937	0.000	2.527
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	1119	686
d_b, Bicycle Delay [s]	8.76	8.75	19.45
l_b,int, Bicycle LOS Score for Intersection	2.257	2.711	1.560
Bicycle LOS	B	B	A

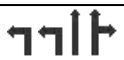
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	40	1179	2	274	1288	356	12	0	56	205	4	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1179	2	274	1288	356	12	0	56	205	4	2
Peak Hour Factor	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	297	1	69	324	90	3	0	14	52	1	1
Total Analysis Volume [veh/h]	40	1187	2	276	1297	359	12	0	56	206	4	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			2		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	60	60	20	65	65	0	40	0	40	40	40
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	85	85	14	79	79	0	16	0	20	20	20
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	92	92	10	98	98	10	10	14	14
g / C, Green / Cycle	0.04	0.68	0.68	0.07	0.73	0.73	0.07	0.07	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.08	0.44	0.48	0.01	0.02	0.06	0.06
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1737	1781	2736	1781	1780
c, Capacity [veh/h]	78	2423	1271	257	1357	1260	126	194	179	179
d1, Uniform Delay [s]	63.18	8.84	8.84	62.56	9.15	9.73	58.73	59.52	58.15	58.16
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	0.35	0.67	40.25	2.06	2.68	0.24	0.60	2.32	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.32	0.32	1.07	0.61	0.66	0.10	0.29	0.59	0.59
d, Delay for Lane Group [s/veh]	66.94	9.19	9.51	102.82	11.21	12.41	58.97	60.13	60.48	60.48
Lane Group LOS	E	A	A	F	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	4.53	4.87	5.82	11.42	12.23	0.40	0.94	3.62	3.62
50th-Percentile Queue Length [ft/ln]	35.57	113.34	121.77	145.61	285.52	305.69	9.94	23.42	90.56	90.54
95th-Percentile Queue Length [veh/ln]	2.56	8.03	8.49	10.01	16.96	17.96	0.72	1.69	6.52	6.52
95th-Percentile Queue Length [ft/ln]	64.03	200.64	212.26	250.33	424.08	449.06	17.90	42.16	163.01	162.96

Movement, Approach, & Intersection Results

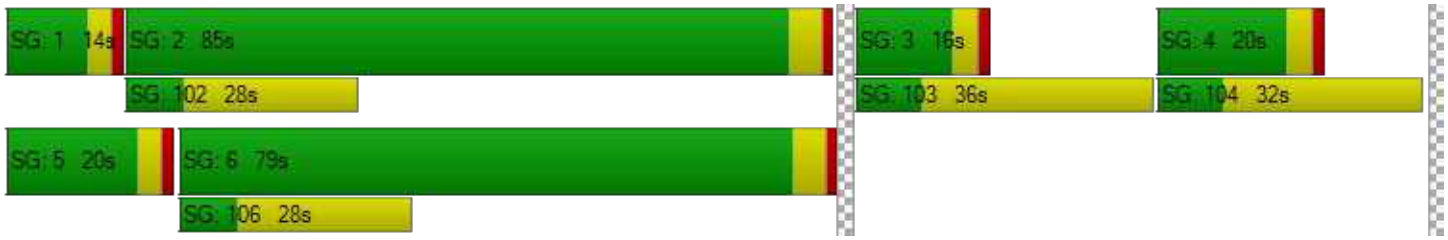
d_M, Delay for Movement [s/veh]	66.94	9.30	9.51	102.82	11.64	12.41	58.97	58.97	60.13	60.48	60.48	60.48
Movement LOS	E	A	A	F	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	11.18			24.81			59.92			60.48		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	22.83											
Intersection LOS	C											
Intersection V/C	0.646											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.07	56.07	56.99	56.99
l_p,int, Pedestrian LOS Score for Intersectio	3.025	3.162	2.376	2.125
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1096	175	234
d_b, Bicycle Delay [s]	11.23	13.81	56.28	52.67
l_b,int, Bicycle LOS Score for Intersection	2.236	3.154	1.672	1.909
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	154	705	64	26	935	396	507	25	207	19	14	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	705	64	26	935	396	507	25	207	19	14	21
Peak Hour Factor	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	179	16	7	237	100	128	6	52	5	4	5
Total Analysis Volume [veh/h]	156	714	65	26	947	401	514	25	210	19	14	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	20	80	80	18	72	72	35	35	35	0	35	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	58	58	15	58	58	37	45	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	102	102	5	94	94	29	29	29	11	11
g / C, Green / Cycle	0.08	0.66	0.66	0.03	0.61	0.61	0.18	0.18	0.18	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.09	0.21	0.21	0.01	0.38	0.38	0.15	0.15	0.14	0.01	0.02
s, saturation flow rate [veh/h]	1781	1870	1808	1781	1870	1684	1781	1789	1554	1781	1677
c, Capacity [veh/h]	150	1235	1194	56	1137	1024	329	331	287	128	120
d1, Uniform Delay [s]	71.04	11.35	11.37	73.79	19.11	19.32	60.71	60.70	59.38	67.56	68.26
k, delay calibration	0.21	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	58.57	0.68	0.71	2.16	2.53	2.94	3.75	3.71	2.67	0.40	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.32	0.32	0.46	0.62	0.63	0.82	0.82	0.73	0.15	0.29
d, Delay for Lane Group [s/veh]	129.61	12.04	12.08	75.96	21.65	22.26	64.46	64.41	62.06	67.96	69.25
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.37	5.99	5.84	1.05	16.30	15.20	10.63	10.66	8.07	0.73	1.37
50th-Percentile Queue Length [ft/ln]	209.33	149.85	145.88	26.31	407.59	379.93	265.80	266.51	201.70	18.28	34.19
95th-Percentile Queue Length [veh/ln]	13.32	10.01	9.80	1.89	22.93	21.59	15.98	16.02	12.73	1.32	2.46
95th-Percentile Queue Length [ft/ln]	333.05	250.23	244.92	47.36	573.14	539.77	399.49	400.38	318.15	32.90	61.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	129.61	12.06	12.08	75.96	21.80	22.26	64.44	64.41	62.06	67.96	69.25	69.25
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	31.67			22.96			63.77			68.79		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	36.20											
Intersection LOS	D											
Intersection V/C	0.659											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.92	66.92	66.92	66.92
l_p,int, Pedestrian LOS Score for Intersectio	2.879	2.976	2.425	2.012
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	529	423
d_b, Bicycle Delay [s]	33.36	33.32	42.08	48.20
l_b,int, Bicycle LOS Score for Intersection	2.331	2.693	2.795	1.649
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.559

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	627	72	246	884	69	128	41	1	46	21	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	627	72	246	884	69	128	41	1	46	21	181
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	166	19	65	233	18	34	11	0	12	6	48
Total Analysis Volume [veh/h]	0	662	76	260	933	73	135	43	1	49	22	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	56	34	56	22	56	34	34	34	34	0	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	41	41	17	61	61	25	25
g / C, Green / Cycle	0.45	0.45	0.19	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.15	0.27	0.27	0.18	0.16
s, saturation flow rate [veh/h]	1870	1628	1781	1870	1816	1016	1666
c, Capacity [veh/h]	887	738	334	1260	1224	349	505
d1, Uniform Delay [s]	17.07	17.11	34.85	6.58	6.60	29.91	28.19
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.25	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	2.12	3.93	0.96	1.00	2.63	1.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.47	0.78	0.40	0.41	0.51	0.52
d, Delay for Lane Group [s/veh]	18.67	19.23	38.78	7.55	7.60	32.54	29.95
Lane Group LOS	B	B	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.65	5.06	5.61	3.87	3.80	3.77	4.99
50th-Percentile Queue Length [ft/ln]	141.25	126.45	140.33	96.70	94.96	94.34	124.77
95th-Percentile Queue Length [veh/ln]	9.55	8.75	9.50	6.96	6.84	6.79	8.65
95th-Percentile Queue Length [ft/ln]	238.70	218.66	237.46	174.06	170.92	169.81	216.36

Movement, Approach, & Intersection Results

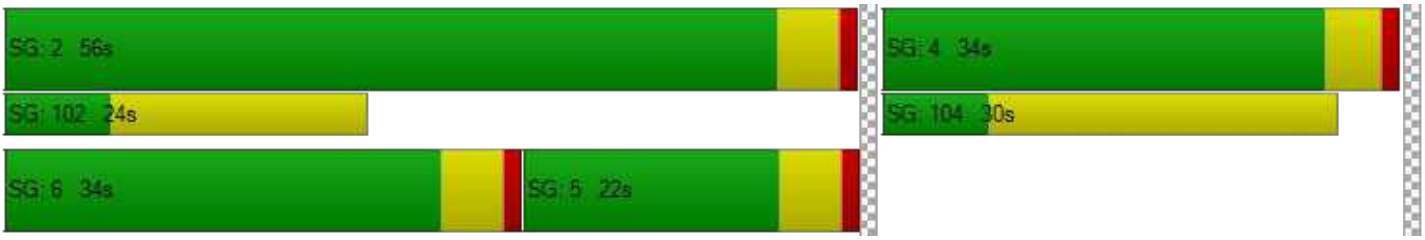
d_M, Delay for Movement [s/veh]	18.67	18.90	19.23	38.78	7.57	7.60	32.54	32.54	32.54	29.95	29.95	29.95
Movement LOS	B	B	B	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.93			13.98			32.54			29.95		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.55											
Intersection LOS	B											
Intersection V/C	0.559											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	28.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	20.78
l_p,int, Pedestrian LOS Score for Intersectio	2.690	3.004	1.826	2.006
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	1130	650	650
d_b, Bicycle Delay [s]	20.79	8.54	20.54	20.53
l_b,int, Bicycle LOS Score for Intersection	2.168	2.604	1.855	1.992
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.841

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	139	413	443	480	475	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	413	443	480	475	105
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	111	119	129	128	28
Total Analysis Volume [veh/h]	149	444	476	516	511	113
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing m	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	33	44	44	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	48	48	93	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	5	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	Yes	No	No	No	Yes	
Pedestrian Recall	No	No	No	Yes	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.60
g_i, Effective Green Time [s]	35	77	40	91	47
g / C, Green / Cycle	0.27	0.59	0.31	0.70	0.36
(v / s)_i Volume / Saturation Flow Rate	0.08	0.28	0.27	0.28	0.35
s, saturation flow rate [veh/h]	1781	1575	1781	1870	1788
c, Capacity [veh/h]	479	899	545	1311	641
d1, Uniform Delay [s]	37.91	16.57	42.71	8.03	41.10
k, delay calibration	0.50	0.50	0.34	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	1.94	12.69	0.89	29.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.49	0.87	0.39	0.97
d, Delay for Lane Group [s/veh]	39.60	18.50	55.41	8.92	70.68
Lane Group LOS	D	B	E	A	E
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.05	8.24	16.18	5.81	24.49
50th-Percentile Queue Length [ft/ln]	101.19	206.08	404.58	145.18	612.29
95th-Percentile Queue Length [veh/ln]	7.29	12.95	22.78	9.76	32.61
95th-Percentile Queue Length [ft/ln]	182.14	323.80	569.52	243.98	815.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.60	18.50	55.41	8.92	70.68	70.68
Movement LOS	D	B	E	A	E	E
d_A, Approach Delay [s/veh]	23.80		31.23		70.68	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	40.38					
Intersection LOS	D					
Intersection V/C	0.841					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	56.33	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.342	2.704	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	1361	623
d_b, Bicycle Delay [s]	36.98	6.76	31.40
l_b,int, Bicycle LOS Score for Intersection	1.560	3.196	2.589
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	294.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	56	35	39	127	118	322	341	565	119	224	507	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	35	39	127	118	322	341	565	119	224	507	116
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	10	11	35	32	88	94	155	33	62	139	32
Total Analysis Volume [veh/h]	62	38	43	140	130	354	375	621	131	246	557	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing m	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	62	25	62	57	25	57	28	62	25	22	57	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	55	38	55	83	38	83	9	55	38	37	83	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	2.5	2.6	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.50	4.60	4.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.50	2.60	2.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	45	45	45	45	5	55	55	22	72	72
g / C, Green / Cycle	0.34	0.34	0.34	0.34	0.04	0.42	0.42	0.17	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.07	0.05	0.20	0.23	0.21	0.17	0.09	0.14	0.19	0.19
s, saturation flow rate [veh/h]	911	1690	1331	1532	1781	3560	1389	1781	1870	1705
c, Capacity [veh/h]	155	582	500	527	71	1504	587	298	1031	940
d1, Uniform Delay [s]	55.36	29.37	38.20	35.97	62.38	26.27	23.63	52.24	16.11	16.22
k, delay calibration	0.10	0.10	0.15	0.21	0.42	0.50	0.50	0.14	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	0.10	1.25	2.88	1953.09	0.84	0.88	7.39	0.91	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.14	0.54	0.67	5.28	0.41	0.22	0.82	0.34	0.35
d, Delay for Lane Group [s/veh]	56.95	29.47	39.45	38.85	2015.47	27.11	24.51	59.63	17.02	17.25
Lane Group LOS	E	C	D	D	F	C	C	E	B	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.05	1.82	7.52	9.89	40.85	6.86	2.68	8.30	5.95	5.64
50th-Percentile Queue Length [ft/ln]	51.15	45.58	188.06	247.19	1021.17	171.42	66.99	207.56	148.79	140.90
95th-Percentile Queue Length [veh/ln]	3.68	3.28	12.02	15.04	60.80	11.15	4.82	13.03	9.95	9.53
95th-Percentile Queue Length [ft/ln]	92.06	82.05	300.52	376.11	1520.00	278.78	120.58	325.69	248.81	238.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.95	29.47	29.47	39.45	39.45	38.85	2015.47	27.11	24.51	59.63	17.10	17.25
Movement LOS	E	C	C	D	D	D	F	C	C	E	B	B
d_A, Approach Delay [s/veh]	41.39			39.11			688.42			28.37		
Approach LOS	D			D			F			C		
d_I, Intersection Delay [s/veh]	294.82											
Intersection LOS	F											
Intersection V/C	0.656											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.45	54.45	54.45	54.45
l_p,int, Pedestrian LOS Score for Intersectio	2.126	2.295	3.024	2.853
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	777	1208
d_b, Bicycle Delay [s]	35.95	36.22	24.48	10.39
l_b,int, Bicycle LOS Score for Intersection	1.796	2.589	2.489	2.327
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	273.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	16	0	78	7	0	45	127	925	6	41	619	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	0	78	7	0	45	127	925	6	41	619	50
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	22	2	0	13	35	257	2	11	172	14
Total Analysis Volume [veh/h]	18	0	87	8	0	50	141	1028	7	46	688	56
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

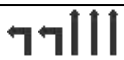
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.77	0.00	0.20	0.35	0.00	0.18	0.16	0.01	0.00	0.07	0.01	0.00
d_M, Delay for Movement [s/veh]	273.80	212.64	128.12	195.01	132.56	49.46	9.98	0.00	0.00	10.75	0.00	0.00
Movement LOS	F	F	F	F	F	E	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	6.09	6.09	6.09	2.44	2.44	2.44	0.58	0.00	0.00	0.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	152.30	152.30	152.30	60.89	60.89	60.89	14.54	0.00	0.00	5.50	0.00	0.00
d_A, Approach Delay [s/veh]	153.10			69.54			1.20			0.63		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	10.34											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	1026	81	1077	3402	148	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1026	81	1077	3402	148	388
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	278	22	291	920	40	105
Total Analysis Volume [veh/h]	1110	88	1166	3682	160	420
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	113.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	60	144	84	144	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	5
Pedestrian Clearance [s]	35	13	0	13	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	29	29	39	72	11	54
g / C, Green / Cycle	0.31	0.31	0.42	0.77	0.12	0.58
(v / s)_i Volume / Saturation Flow Rate	0.22	0.06	0.34	0.72	0.05	0.10
s, saturation flow rate [veh/h]	5094	1570	3459	5094	3459	4220
c, Capacity [veh/h]	1600	493	1454	3938	416	2327
d1, Uniform Delay [s]	27.94	23.13	23.54	8.62	37.68	10.38
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.17	1.07	1.36	0.58	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.18	0.80	0.93	0.38	0.18
d, Delay for Lane Group [s/veh]	28.49	23.30	24.61	9.98	38.26	10.41
Lane Group LOS	C	C	C	A	D	B
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.54	1.30	9.82	8.59	1.67	1.32
50th-Percentile Queue Length [ft/ln]	163.55	32.39	245.48	214.84	41.85	33.05
95th-Percentile Queue Length [veh/ln]	10.74	2.33	14.96	13.40	3.01	2.38
95th-Percentile Queue Length [ft/ln]	268.42	58.30	373.95	335.03	75.33	59.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.49	23.30	24.61	9.98	38.26	10.41
Movement LOS	C	C	C	A	D	B
d_A, Approach Delay [s/veh]	28.11		13.50		18.10	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	16.54					
Intersection LOS	B					
Intersection V/C	0.876					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.82	0.00	37.82
l_p,int, Pedestrian LOS Score for Intersectio	3.884	0.000	2.895
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	2978	625
d_b, Bicycle Delay [s]	9.40	11.09	21.91
l_b,int, Bicycle LOS Score for Intersection	2.219	4.226	1.670
Bicycle LOS	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	93	211	430	10	39	27	62	733	161	883	2172	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	211	430	10	39	27	62	733	161	883	2172	41
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	56	115	3	10	7	17	195	43	235	579	11
Total Analysis Volume [veh/h]	99	225	458	11	42	29	66	781	172	941	2316	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing m	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	149	50	25	50	149
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	92	92	92	92	92	92	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	12	16	42	1	6	6	59	33	33	59	50	50
g / C, Green / Cycle	0.13	0.18	0.46	0.01	0.07	0.07	0.64	0.35	0.35	0.64	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.12	0.10	0.11	0.01	0.01	0.02	0.15	0.15	0.11	0.51	0.45	0.03
s, saturation flow rate [veh/h]	797	2249	4220	937	3560	1553	436	5094	1589	1834	5094	1589
c, Capacity [veh/h]	107	403	1948	13	236	103	278	1804	563	1176	2773	865
d1, Uniform Delay [s]	39.27	34.41	14.94	45.26	40.54	40.81	14.97	22.64	21.50	11.78	17.50	9.81
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.83	1.22	0.06	85.33	0.36	1.48	0.43	0.16	0.30	1.30	0.70	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.56	0.24	0.87	0.18	0.28	0.24	0.43	0.31	0.80	0.84	0.05
d, Delay for Lane Group [s/veh]	64.09	35.63	15.00	130.58	40.90	42.28	15.41	22.81	21.80	13.09	18.20	9.84
Lane Group LOS	E	D	B	F	D	D	B	C	C	B	B	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.86	2.27	1.80	0.55	0.47	0.67	0.23	4.20	2.67	4.67	12.54	0.40
50th-Percentile Queue Length [ft/ln]	71.49	56.74	44.88	13.79	11.65	16.85	5.87	105.01	66.63	116.87	313.55	10.02
95th-Percentile Queue Length [veh/ln]	5.15	4.09	3.23	0.99	0.84	1.21	0.42	7.56	4.80	8.22	18.35	0.72
95th-Percentile Queue Length [ft/ln]	128.68	102.14	80.78	24.82	20.98	30.33	10.56	189.02	119.93	205.52	458.75	18.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.09	35.63	15.00	130.58	40.90	42.28	15.41	22.81	21.80	13.09	18.20	9.84
Movement LOS	E	D	B	F	D	D	B	C	C	B	B	A
d_A, Approach Delay [s/veh]	27.15			53.42			22.16			16.63		
Approach LOS	C			D			C			B		
d_I, Intersection Delay [s/veh]	19.89											
Intersection LOS	B											
Intersection V/C	0.709											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.36	0.00	37.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.578	0.000	3.162	0.000
Crosswalk LOS	D	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	819	673	3245	1982
d_b, Bicycle Delay [s]	16.01	20.21	17.80	0.00
l_b,int, Bicycle LOS Score for Intersection	2.205	1.627	2.120	3.375
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	125.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.927

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	125	709	74	495	849	18	59	16	73	16	6	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	709	74	495	849	18	59	16	73	16	6	155
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	182	19	127	217	5	15	4	19	4	2	40
Total Analysis Volume [veh/h]	128	726	76	507	870	18	60	16	75	16	6	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing m	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	7	49	49	7	49	49	34	34	34	34	34	34
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	56	49	49	56	49	49	26	27
g / C, Green / Cycle	0.63	0.55	0.55	0.63	0.55	0.55	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.20	0.49	0.49	0.72	0.45	0.45	0.26	0.19
s, saturation flow rate [veh/h]	641	837	802	701	984	973	572	947
c, Capacity [veh/h]	269	460	440	251	541	535	223	301
d1, Uniform Delay [s]	18.51	17.81	17.97	38.67	16.68	16.75	32.01	28.23
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.26	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	21.59	23.34	472.30	13.30	13.75	8.37	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.89	0.90	2.02	0.82	0.83	0.68	0.60
d, Delay for Lane Group [s/veh]	24.42	39.40	41.31	510.96	29.98	30.50	40.38	30.67
Lane Group LOS	C	D	D	F	C	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.35	9.05	9.00	35.15	8.81	8.84	3.71	3.53
50th-Percentile Queue Length [ft/ln]	33.82	226.34	225.02	878.75	220.18	221.04	92.85	88.26
95th-Percentile Queue Length [veh/ln]	2.43	13.99	13.92	62.58	13.67	13.72	6.69	6.35
95th-Percentile Queue Length [ft/ln]	60.87	349.71	348.02	1564.58	341.86	342.96	167.13	158.87

Movement, Approach, & Intersection Results

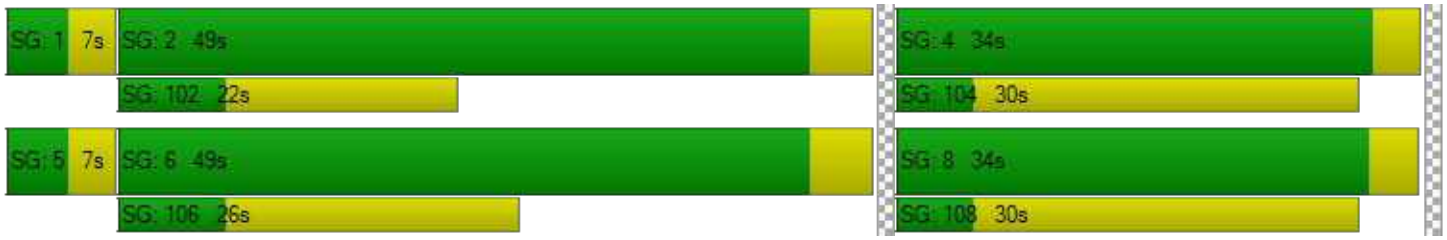
d_M, Delay for Movement [s/veh]	24.42	40.24	41.31	510.96	30.23	30.50	40.38	40.38	40.38	30.67	30.67	30.67
Movement LOS	C	D	D	F	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	38.15			204.95			40.38			30.67		
Approach LOS	D			F			D			C		
d_I, Intersection Delay [s/veh]	125.34											
Intersection LOS	F											
Intersection V/C	0.927											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.44	36.44	34.66	34.66
l_p,int, Pedestrian LOS Score for Intersectio	3.115	2.920	1.942	2.648
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1000	685	689
d_b, Bicycle Delay [s]	11.32	11.46	19.51	19.43
l_b,int, Bicycle LOS Score for Intersection	2.327	2.710	1.809	1.858
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.903

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	73	693	984	49	56	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	693	984	49	56	83
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	179	254	13	14	21
Total Analysis Volume [veh/h]	75	717	1018	51	58	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing m	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	130	130	130	30	30
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	130	114	114	30	30
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	133	117	117	20	20
g / C, Green / Cycle	0.08	0.83	0.73	0.73	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.09	0.45	0.64	0.65	0.03	0.11
s, saturation flow rate [veh/h]	797	1593	837	821	1704	803
c, Capacity [veh/h]	65	1324	611	600	213	101
d1, Uniform Delay [s]	73.59	4.15	16.06	16.64	63.49	68.43
k, delay calibration	0.21	0.50	0.50	0.50	0.04	0.09
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	120.19	1.59	15.95	17.97	0.25	15.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.54	0.87	0.89	0.27	0.86
d, Delay for Lane Group [s/veh]	193.78	5.75	32.01	34.61	63.74	83.77
Lane Group LOS	F	A	C	C	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.82	3.00	15.45	16.19	2.18	3.89
50th-Percentile Queue Length [ft/ln]	120.54	75.06	386.29	404.82	54.48	97.18
95th-Percentile Queue Length [veh/ln]	8.68	5.40	21.90	22.79	3.92	7.00
95th-Percentile Queue Length [ft/ln]	216.97	135.10	547.46	569.81	98.07	174.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	193.78	5.75	33.24	34.61	63.74	83.77
Movement LOS	F	A	C	C	E	F
d_A, Approach Delay [s/veh]	23.55		33.31		75.70	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	32.50					
Intersection LOS	C					
Intersection V/C	0.903					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.31	71.31	69.44
l_p,int, Pedestrian LOS Score for Intersectio	2.821	2.759	2.055
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1574	1374	337
d_b, Bicycle Delay [s]	3.65	7.85	55.36
l_b,int, Bicycle LOS Score for Intersection	2.213	2.442	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	35.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.932

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	750	583	48	1076	457	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	750	583	48	1076	457	49
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	197	153	13	283	120	13
Total Analysis Volume [veh/h]	789	613	50	1131	481	52
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	135	135	21	135	30	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	115	115	15	130	30	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	117	117	6	126	27	27
g / C, Green / Cycle	0.73	0.73	0.04	0.79	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.50	0.40	0.03	0.71	0.17	0.17
s, saturation flow rate [veh/h]	1593	1518	1781	1593	1406	1744
c, Capacity [veh/h]	1166	1111	66	1255	235	292
d1, Uniform Delay [s]	11.40	9.37	76.47	12.46	66.73	66.73
k, delay calibration	0.50	0.50	0.04	0.50	0.38	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.16	1.97	6.52	10.59	53.93	48.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.55	0.76	0.90	1.01	1.01
d, Delay for Lane Group [s/veh]	14.57	11.34	82.99	23.04	120.66	115.47
Lane Group LOS	B	B	F	C	F	F
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.21	9.16	2.15	13.76	13.18	15.92
50th-Percentile Queue Length [ft/ln]	180.27	228.99	53.81	344.06	329.41	398.07
95th-Percentile Queue Length [veh/ln]	11.61	14.12	3.87	19.85	19.24	22.60
95th-Percentile Queue Length [ft/ln]	290.36	353.08	96.85	496.17	480.91	564.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.57	11.34	82.99	23.04	118.07	115.47
Movement LOS	B	B	F	C	F	F
d_A, Approach Delay [s/veh]	13.16		25.58		117.79	
Approach LOS	B		C		F	
d_I, Intersection Delay [s/veh]	35.76					
Intersection LOS	D					
Intersection V/C	0.932					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.356
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1386	1574	335
d_b, Bicycle Delay [s]	7.59	3.64	55.54
l_b,int, Bicycle LOS Score for Intersection	2.716	2.534	2.439
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	287.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.424

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	178	1057	285	66	1434	20	22	136	375	382	97	123
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	178	1057	285	66	1434	20	22	136	375	382	97	123
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	287	77	18	389	5	6	37	102	104	26	33
Total Analysis Volume [veh/h]	193	1146	309	72	1555	22	24	148	407	414	105	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	80	80	21	80	80	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	31	31	39	59	59	10	29	29	31	50	50
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	20	20	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	8	37	37	7	36	36	3	35	35	36	67	67
g / C, Green / Cycle	0.06	0.29	0.29	0.05	0.28	0.28	0.02	0.27	0.27	0.28	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.11	0.28	0.28	0.04	0.65	0.65	0.02	0.09	0.26	0.27	0.13	0.19
s, saturation flow rate [veh/h]	1781	3560	1637	1781	1593	829	1528	1604	1538	1547	837	689
c, Capacity [veh/h]	110	1023	470	91	441	230	34	428	411	432	432	356
d1, Uniform Delay [s]	61.00	45.72	46.15	60.97	47.00	47.00	63.13	38.48	46.95	46.12	17.40	18.72
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.14	0.04	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	354.86	21.24	39.21	5.57	614.19	622.19	23.19	0.18	21.72	5.87	0.29	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.76	0.97	0.99	0.79	2.35	2.35	0.70	0.35	0.99	0.96	0.24	0.37
d, Delay for Lane Group [s/veh]	415.86	66.95	85.36	66.54	661.18	669.19	86.31	38.65	68.67	51.98	17.69	19.37
Lane Group LOS	F	E	F	E	F	F	F	D	E	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	14.37	18.37	19.72	2.51	44.79	47.16	1.01	3.86	15.37	6.89	1.78	2.45
50th-Percentile Queue Length [ft/ln]	359.28	459.18	492.97	62.81	1119.87	1178.98	25.25	96.60	384.28	172.35	44.61	61.21
95th-Percentile Queue Length [veh/ln]	23.61	25.40	27.00	4.52	74.24	77.88	1.82	6.96	21.80	11.20	3.21	4.41
95th-Percentile Queue Length [ft/ln]	590.32	634.89	675.03	113.06	1856.01	1946.92	45.45	173.88	545.03	280.00	80.30	110.19

Movement, Approach, & Intersection Results

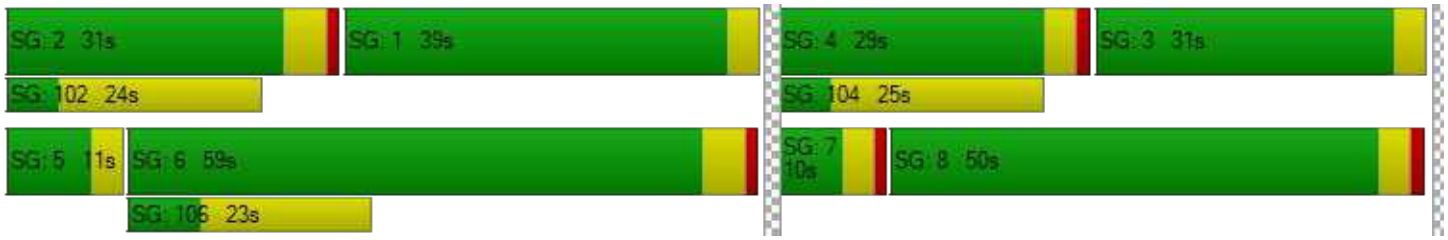
d_M, Delay for Movement [s/veh]	415.86	69.47	85.36	66.54	663.85	669.19	86.31	38.65	68.67	51.98	17.69	19.37
Movement LOS	F	E	F	E	F	F	F	D	E	D	B	B
d_A, Approach Delay [s/veh]	113.02			637.84			61.73			39.81		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	287.05											
Intersection LOS	F											
Intersection V/C	1.424											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	46.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	27.14	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.360	2.926	2.368	2.549
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	831	385	708
d_b, Bicycle Delay [s]	41.64	22.23	42.51	27.33
l_b,int, Bicycle LOS Score for Intersection	2.466	2.467	2.515	2.635
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	144.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.252

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	90	1201	1321	764	333	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	1201	1321	764	333	56
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	317	348	201	88	15
Total Analysis Volume [veh/h]	95	1267	1393	806	351	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		2		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	12	60	48	48	20	20
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	8	47	36	36	36	36
g / C, Green / Cycle	0.08	0.51	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.07	0.48	0.50	0.66	0.37	0.04
s, saturation flow rate [veh/h]	1312	2623	2792	1227	937	1569
c, Capacity [veh/h]	111	1337	1081	475	362	606
d1, Uniform Delay [s]	41.97	21.61	28.48	28.09	28.02	18.20
k, delay calibration	0.04	0.20	0.21	0.50	0.42	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.87	7.44	132.84	322.06	36.45	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.95	1.29	1.70	0.97	0.10
d, Delay for Lane Group [s/veh]	48.84	29.05	161.32	350.15	64.47	18.23
Lane Group LOS	D	C	F	F	E	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.34	13.38	31.19	52.27	10.95	0.80
50th-Percentile Queue Length [ft/ln]	58.48	334.52	779.68	1306.64	273.66	19.99
95th-Percentile Queue Length [veh/ln]	4.21	19.38	47.09	83.52	16.37	1.44
95th-Percentile Queue Length [ft/ln]	105.26	484.50	1177.37	2087.88	409.31	35.98

Movement, Approach, & Intersection Results

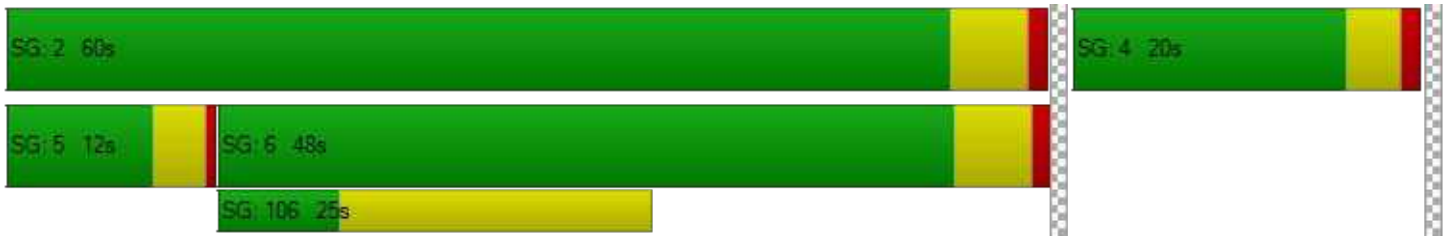
d_M, Delay for Movement [s/veh]	48.84	29.05	161.32	350.15	64.47	18.23
Movement LOS	D	C	F	F	E	B
d_A, Approach Delay [s/veh]	30.43		230.53		57.82	
Approach LOS	C		F		E	
d_I, Intersection Delay [s/veh]	144.07					
Intersection LOS	F					
Intersection V/C	1.252					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	36.17
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.367
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1171	914	340
d_b, Bicycle Delay [s]	8.03	13.74	32.08
l_b,int, Bicycle LOS Score for Intersection	2.683	3.374	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	84.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	18	859	10	36	1133	46	40	4	15	83	6	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	859	10	36	1133	46	40	4	15	83	6	133
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	222	3	9	293	12	10	1	4	21	2	34
Total Analysis Volume [veh/h]	19	888	10	37	1172	48	41	4	16	86	6	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	3	96	96	6	100	11	11	11	21	21
g / C, Green / Cycle	0.02	0.63	0.63	0.04	0.65	0.07	0.07	0.07	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.27	0.27	0.04	0.80	0.02	0.02	0.01	0.09	0.12
s, saturation flow rate [veh/h]	937	1422	1862	937	1533	937	1364	1318	937	1181
c, Capacity [veh/h]	18	894	1170	40	999	69	101	97	129	163
d1, Uniform Delay [s]	75.25	14.58	14.59	73.21	26.70	67.12	67.12	66.48	62.73	64.89
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	120.63	0.72	0.55	49.94	108.62	2.03	1.39	0.79	5.72	20.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.43	0.44	0.93	1.22	0.27	0.26	0.16	0.66	0.88
d, Delay for Lane Group [s/veh]	195.88	15.30	15.13	123.16	135.32	69.15	68.50	67.26	68.45	85.05
Lane Group LOS	F	B	B	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.30	7.20	9.39	2.02	64.93	0.74	1.06	0.63	3.43	6.49
50th-Percentile Queue Length [ft/ln]	32.49	180.06	234.65	50.50	1623.20	18.53	26.38	15.66	85.70	162.36
95th-Percentile Queue Length [veh/ln]	2.34	11.60	14.41	3.64	91.76	1.33	1.90	1.13	6.17	10.67
95th-Percentile Queue Length [ft/ln]	58.48	290.10	360.26	90.90	2294.06	33.35	47.48	28.19	154.26	266.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	195.88	15.21	15.13	123.16	135.32	135.32	68.80	68.50	67.26	68.45	85.05	85.05
Movement LOS	F	B	B	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	18.95			134.96			68.37			78.84		
Approach LOS	B			F			E			E		
d_I, Intersection Delay [s/veh]	84.92											
Intersection LOS	F											
Intersection V/C	1.004											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.00	66.00	66.00	66.00
l_p,int, Pedestrian LOS Score for Intersectio	2.601	2.793	2.167	2.042
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	261	261	392	392
d_b, Bicycle Delay [s]	57.99	58.02	49.56	49.56
l_b,int, Bicycle LOS Score for Intersection	2.316	3.634	1.660	1.939
Bicycle LOS	B	D	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	17	729	4	5	1053	128	167	3	38	3	7	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	729	4	5	1053	128	167	3	38	3	7	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	192	1	1	277	34	44	1	10	1	2	1
Total Analysis Volume [veh/h]	18	767	4	5	1108	135	176	3	40	3	7	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing m	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			59			13			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	94	94	94	94	94	94	36	36	36	0	36	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	99	99	99	99	23	23
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.04	0.41	0.01	0.68	0.16	0.01
s, saturation flow rate [veh/h]	447	1868	698	1822	1340	1747
c, Capacity [veh/h]	157	1418	454	1384	288	344
d1, Uniform Delay [s]	40.43	6.40	12.05	11.82	52.07	44.23
k, delay calibration	0.50	0.50	0.50	0.50	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.48	1.50	0.04	9.52	7.58	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.54	0.01	0.90	0.76	0.04
d, Delay for Lane Group [s/veh]	41.91	7.90	12.09	21.34	59.65	44.28
Lane Group LOS	D	A	B	C	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.54	8.51	0.07	26.36	7.60	0.39
50th-Percentile Queue Length [ft/ln]	13.44	212.81	1.73	659.01	190.09	9.64
95th-Percentile Queue Length [veh/ln]	0.97	13.30	0.12	34.78	12.13	0.69
95th-Percentile Queue Length [ft/ln]	24.20	332.44	3.11	869.51	303.14	17.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.91	7.90	7.90	12.09	21.34	21.34	59.65	59.65	59.65	44.28	44.28	44.28
Movement LOS	D	A	A	B	C	C	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	8.68			21.30			59.65			44.28		
Approach LOS	A			C			E			D		
d_I, Intersection Delay [s/veh]	20.76											
Intersection LOS	C											
Intersection V/C	0.894											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.39	54.39	54.39	54.39
l_p,int, Pedestrian LOS Score for Intersectio	2.487	2.921	1.943	1.750
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1385	1385	491	491
d_b, Bicycle Delay [s]	6.17	6.33	37.19	37.07
l_b,int, Bicycle LOS Score for Intersection	2.861	3.619	1.921	1.583
Bicycle LOS	C	D	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	18.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	4	595	75	35	1055	1	27	69	12	102	108	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	595	75	35	1055	1	27	69	12	102	108	114
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	159	20	9	282	0	7	18	3	27	29	30
Total Analysis Volume [veh/h]	4	636	80	37	1127	1	29	74	13	109	115	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing m	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			32			7			13		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	64	64	64	64	64	64	26	26	26	0	26	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	63	63	63	63	19	19	19	19
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.01	0.39	0.05	0.60	0.03	0.05	0.09	0.14
s, saturation flow rate [veh/h]	499	1825	735	1870	1138	1802	1282	1680
c, Capacity [veh/h]	193	1273	438	1305	144	381	267	355
d1, Uniform Delay [s]	27.12	6.77	12.48	10.37	41.17	29.43	35.88	32.60
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	1.80	0.38	7.81	0.68	0.30	1.00	2.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.56	0.08	0.86	0.20	0.23	0.41	0.67
d, Delay for Lane Group [s/veh]	27.31	8.56	12.85	18.18	41.85	29.73	36.88	34.78
Lane Group LOS	C	A	B	B	D	C	D	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	6.42	0.44	16.79	0.65	1.59	2.30	4.92
50th-Percentile Queue Length [ft/ln]	1.95	160.51	11.07	419.81	16.26	39.77	57.50	122.99
95th-Percentile Queue Length [veh/ln]	0.14	10.58	0.80	23.51	1.17	2.86	4.14	8.56
95th-Percentile Queue Length [ft/ln]	3.50	264.40	19.92	587.82	29.27	71.59	103.50	213.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.31	8.56	8.56	12.85	18.18	18.18	41.85	29.73	29.73	36.88	34.78	34.78
Movement LOS	C	A	A	B	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	8.67			18.01			32.76			35.44		
Approach LOS	A			B			C			D		
d_I, Intersection Delay [s/veh]	18.44											
Intersection LOS	B											
Intersection V/C	0.807											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersectio	2.628	2.568	2.009	2.138
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1331	1331	487	487
d_b, Bicycle Delay [s]	5.11	5.12	25.86	25.94
l_b,int, Bicycle LOS Score for Intersection	2.748	3.482	1.751	2.131
Bicycle LOS	B	C	A	B

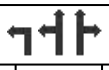
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	69.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.885

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	32	208	102	356	146	759	86	335	144	346	246	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	32	208	102	356	146	759	86	335	144	346	246	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	54	27	93	38	198	22	87	38	90	64	3
Total Analysis Volume [veh/h]	33	217	106	371	152	791	90	349	150	360	256	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10			2			10			2		
v_di, Inbound Pedestrian Volume crossing m	10			2			10			2		
v_co, Outbound Pedestrian Volume crossing	5			3			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			3			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	17			17			6			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	22	22	22	70	70	70	18	18	18	18	22	22	22
g / C, Green / Cycle	0.15	0.15	0.15	0.47	0.47	0.47	0.12	0.12	0.12	0.12	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.12	0.07	0.15	0.14	0.51	0.05	0.09	0.09	0.10	0.12	0.12	0.12
s, saturation flow rate [veh/h]	1781	1870	1470	1781	1832	1558	1781	1870	1870	1528	1781	1804	1840
c, Capacity [veh/h]	266	279	219	830	853	725	210	221	221	180	257	260	265
d1, Uniform Delay [s]	55.26	61.35	58.11	25.07	24.95	39.34	61.40	64.29	64.29	64.37	62.09	62.08	62.09
k, delay calibration	0.11	0.16	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	6.58	1.64	1.00	0.93	60.72	1.38	6.25	6.25	9.49	5.84	5.73	5.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.78	0.48	0.32	0.31	1.09	0.43	0.79	0.79	0.83	0.80	0.80	0.81
d, Delay for Lane Group [s/veh]	55.46	67.94	59.75	26.06	25.88	100.06	62.77	70.54	70.54	73.86	67.93	67.81	67.78
Lane Group LOS	E	E	E	C	C	F	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.11	8.50	3.80	6.24	6.21	38.42	3.29	6.90	6.90	6.08	8.07	8.15	8.33
50th-Percentile Queue Length [ft/ln]	27.73	212.45	94.89	156.07	155.13	960.44	82.21	172.3	172.3	152.0	201.72	203.77	208.31
95th-Percentile Queue Length [veh/ln]	2.00	13.28	6.83	10.34	10.29	51.92	5.92	11.20	11.20	10.12	12.73	12.83	13.07
95th-Percentile Queue Length [ft/ln]	49.92	331.97	170.80	258.51	257.26	1297.90	147.9	280.0	280.0	253.1	318.18	320.82	326.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.46	67.94	59.75	26.06	25.88	100.06	62.77	70.54	73.86	67.88	67.79	67.78
Movement LOS	E	E	E	C	C	F	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	64.34			70.57			70.20			67.84		
Approach LOS	E			E			E			E		
d_I, Intersection Delay [s/veh]	69.13											
Intersection LOS	E											
Intersection V/C	0.885											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersectio	2.304	2.818	4.276	2.675
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.43	39.69	50.30	44.75
l_b,int, Bicycle LOS Score for Intersection	2.147	3.728	2.871	2.079
Bicycle LOS	B	D	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	58.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	747	55	16	540	47	161	105	25	156	116	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	747	55	16	540	47	161	105	25	156	116	63
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	208	15	4	150	13	45	29	7	43	32	18
Total Analysis Volume [veh/h]	23	830	61	18	600	52	179	117	28	173	129	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			19			18			18		
v_di, Inbound Pedestrian Volume crossing m	18			18			19			18		
v_co, Outbound Pedestrian Volume crossing	25			20			26			21		
v_ci, Inbound Pedestrian Volume crossing mi	26			21			25			20		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	52			17			11			37		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	4	4	5	5	5	4	4	4	4	4	4
Maximum Green [s]	20	71	71	20	71	71	30	26	30	26	30	26
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	44	44	10	44	44	28	28	28	28	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.70	0.00	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	79	71	79	71	26	26	30	30
g / C, Green / Cycle	0.53	0.48	0.53	0.48	0.17	0.17	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.03	0.49	0.03	0.36	0.10	0.08	0.10	0.12
s, saturation flow rate [veh/h]	855	1830	704	1830	1781	1744	1781	1631
c, Capacity [veh/h]	296	877	147	872	311	304	359	328
d1, Uniform Delay [s]	23.30	38.78	34.17	31.72	56.44	55.38	52.64	54.13
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.51	34.37	0.37	5.82	7.57	5.27	4.59	8.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	1.02	0.12	0.75	0.58	0.48	0.48	0.61
d, Delay for Lane Group [s/veh]	23.82	73.15	34.54	37.53	64.01	60.65	57.23	62.19
Lane Group LOS	C	F	C	D	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.43	39.79	0.32	20.41	6.88	5.39	6.28	7.62
50th-Percentile Queue Length [ft/ln]	10.71	994.73	7.92	510.34	171.88	134.75	156.96	190.54
95th-Percentile Queue Length [veh/ln]	0.77	50.79	0.57	27.82	11.18	9.20	10.39	12.15
95th-Percentile Queue Length [ft/ln]	19.28	1269.68	14.25	695.59	279.38	229.94	259.69	303.73

Movement, Approach, & Intersection Results

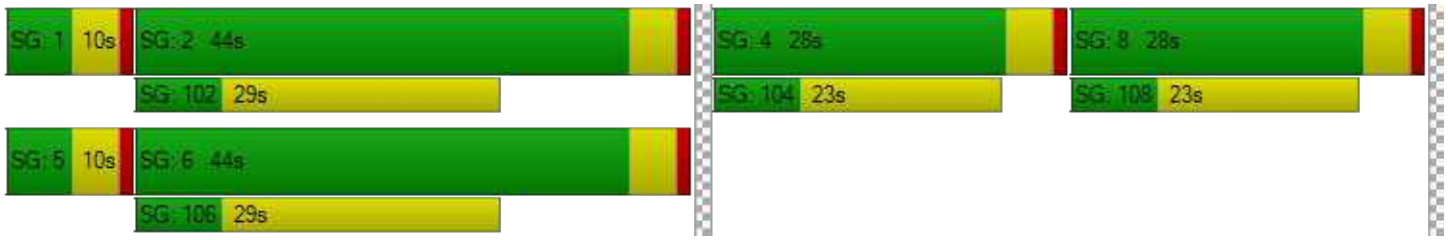
d_M, Delay for Movement [s/veh]	23.82	73.15	73.15	34.54	37.53	37.53	64.01	60.65	60.65	57.23	62.19	62.19
Movement LOS	C	E	E	C	D	D	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	71.91			37.45			62.51			59.88		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	58.48											
Intersection LOS	E											
Intersection V/C	0.734											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.88	63.88	63.88	63.88
l_p,int, Pedestrian LOS Score for Intersectio	2.537	2.517	2.150	2.133
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	528	313	313
d_b, Bicycle Delay [s]	41.43	40.70	53.28	53.99
l_b,int, Bicycle LOS Score for Intersection	3.068	2.665	2.094	2.173
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	10	271	85	15	344	72	65	148	8	87	193	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	271	85	15	344	72	65	148	8	87	193	49
Peak Hour Factor	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	81	25	4	103	21	19	44	2	26	58	15
Total Analysis Volume [veh/h]	12	323	101	18	410	86	77	176	10	104	230	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	13			32			14			33		
v_di, Inbound Pedestrian Volume crossing m	14			33			13			32		
v_co, Outbound Pedestrian Volume crossing	12			26			25			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			25			26			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			39			21			32		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	63	63	63	63
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	22	22	13	17
g / C, Green / Cycle	0.34	0.34	0.20	0.26
(v / s)_i Volume / Saturation Flow Rate	0.25	0.29	0.14	0.22
s, saturation flow rate [veh/h]	1769	1759	1831	1799
c, Capacity [veh/h]	667	664	365	470
d1, Uniform Delay [s]	18.16	19.25	23.75	22.13
k, delay calibration	0.11	0.17	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.09	3.02	2.70	2.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.77	0.72	0.83
d, Delay for Lane Group [s/veh]	19.26	22.28	26.45	25.09
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	Yes
50th-Percentile Queue Length [veh/ln]	5.35	6.99	3.78	5.45
50th-Percentile Queue Length [ft/ln]	133.77	174.82	94.46	136.21
95th-Percentile Queue Length [veh/ln]	9.14	11.33	6.80	9.28
95th-Percentile Queue Length [ft/ln]	228.62	283.24	170.03	231.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.26	19.26	19.26	22.28	22.28	22.28	26.45	26.45	26.45	25.09	25.09	25.09
Movement LOS	B	B	B	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.26			22.28			26.45			25.09		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.83											
Intersection LOS	C											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.58	23.26	21.58	21.58
l_p,int, Pedestrian LOS Score for Intersectio	2.094	2.085	1.970	2.037
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	949	949	949	949
d_b, Bicycle Delay [s]	8.86	8.91	8.83	8.88
l_b,int, Bicycle LOS Score for Intersection	2.279	2.408	1.994	2.206
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.026

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	4	16	8	117	10	276	19	887	126	163	1781	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	8	117	10	276	19	887	126	163	1781	26
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	31	3	72	5	232	33	43	466	7
Total Analysis Volume [veh/h]	4	17	8	122	10	289	20	928	132	171	1863	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	40	0	0	40	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	40	0	0	40	0	15	85	0	25	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	34	34	34	34	6	84	84	16	94	94
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.04	0.56	0.56	0.11	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	6.48	0.18	0.01	0.26	0.08	0.10	0.35	0.35
s, saturation flow rate [veh/h]	460	1589	20	1564	1781	3560	1556	1781	3560	1854
c, Capacity [veh/h]	132	359	51	353	67	1990	870	193	2242	1168
d1, Uniform Delay [s]	47.63	45.16	73.62	54.92	69.30	10.37	8.88	63.22	5.71	5.71
k, delay calibration	0.11	0.11	0.50	0.21	0.11	0.50	0.50	0.15	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.02	773.03	8.69	2.44	0.79	0.37	16.37	0.99	1.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.02	2.60	0.82	0.30	0.47	0.15	0.89	0.55	0.56
d, Delay for Lane Group [s/veh]	48.19	45.19	846.65	63.61	71.75	11.15	9.25	79.59	6.70	7.62
Lane Group LOS	D	D	F	E	E	B	A	E	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.66	0.24	12.88	11.22	0.79	5.12	1.33	7.11	4.30	4.78
50th-Percentile Queue Length [ft/ln]	16.45	6.10	321.92	280.50	19.70	127.93	33.32	177.81	107.38	119.55
95th-Percentile Queue Length [veh/ln]	1.18	0.44	23.18	16.71	1.42	8.83	2.40	11.49	7.69	8.37
95th-Percentile Queue Length [ft/ln]	29.61	10.98	579.46	417.84	35.47	220.68	59.98	287.16	192.36	209.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.19	48.19	45.19	846.65	846.65	63.61	71.75	11.15	9.25	79.59	7.00	7.62
Movement LOS	D	D	D	F	F	E	E	B	A	E	A	A
d_A, Approach Delay [s/veh]	47.36			309.12			12.04			13.04		
Approach LOS	D			F			B			B		
d_I, Intersection Delay [s/veh]	47.73											
Intersection LOS	D											
Intersection V/C	7.026											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.40	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.979	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1040	1173
d_b, Bicycle Delay [s]	44.85	44.94	17.29	12.83
l_b,int, Bicycle LOS Score for Intersection	1.607	2.254	2.451	2.693
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	52.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	305	190	107	55	240	40	113	753	37	192	1153	295
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	305	190	107	55	240	40	113	753	37	192	1153	295
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	51	29	15	65	11	30	202	10	52	310	79
Total Analysis Volume [veh/h]	328	204	115	59	258	43	122	810	40	206	1240	317
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			2			5			3		
v_di, Inbound Pedestrian Volume crossing m	5			3			5			2		
v_co, Outbound Pedestrian Volume crossing	2			6			6			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			6			6			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	18			15			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	32	0	0	32	0	15	71	0	15	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	28	28	28	26	26	26	12	69	69	11	69	69
g / C, Green / Cycle	0.19	0.19	0.19	0.17	0.17	0.17	0.08	0.46	0.46	0.07	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.08	0.03	0.14	0.03	0.07	0.23	0.03	0.12	0.35	0.21
s, saturation flow rate [veh/h]	1781	1847	1513	1781	1870	1527	1781	3560	1532	1781	3560	1539
c, Capacity [veh/h]	336	348	285	309	325	265	137	1647	709	131	1638	708
d1, Uniform Delay [s]	57.94	57.90	53.29	53.01	59.45	52.67	66.72	19.05	15.74	67.69	22.97	18.72
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.93	3.73	0.92	0.30	4.40	0.28	16.90	1.05	0.15	263.52	3.32	2.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.78	0.40	0.19	0.79	0.16	0.89	0.49	0.06	1.57	0.76	0.45
d, Delay for Lane Group [s/veh]	61.87	61.64	54.20	53.30	63.86	52.96	83.61	20.10	15.89	331.21	26.30	20.77
Lane Group LOS	E	E	D	D	E	D	F	C	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.85	10.16	3.91	1.97	9.91	1.43	5.14	7.11	0.59	14.54	14.96	5.70
50th-Percentile Queue Length [ft/ln]	246.31	253.90	97.67	49.14	247.85	35.65	128.48	177.76	14.75	363.53	373.88	142.48
95th-Percentile Queue Length [veh/ln]	15.00	15.38	7.03	3.54	15.08	2.57	8.86	11.48	1.06	23.61	21.30	9.61
95th-Percentile Queue Length [ft/ln]	375.00	384.56	175.80	88.46	376.95	64.18	221.43	287.09	26.54	590.35	532.43	240.36

Movement, Approach, & Intersection Results

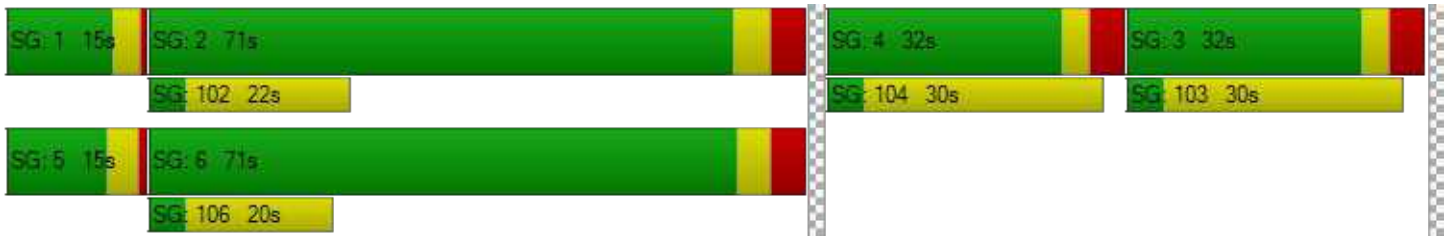
d_M, Delay for Movement [s/veh]	61.83	61.64	54.20	53.30	63.86	52.96	83.61	20.10	15.89	331.21	26.30	20.77
Movement LOS	E	E	D	D	E	D	F	C	B	F	C	C
d_A, Approach Delay [s/veh]	60.41			60.82			27.90			60.93		
Approach LOS	E			E			C			E		
d_I, Intersection Delay [s/veh]	52.25											
Intersection LOS	D											
Intersection V/C	0.721											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.25	67.25	67.25	67.25
l_p,int, Pedestrian LOS Score for Intersectio	2.485	2.322	2.931	2.957
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	340	850	845
d_b, Bicycle Delay [s]	52.17	52.09	24.85	25.14
l_b,int, Bicycle LOS Score for Intersection	2.627	2.154	2.362	3.014
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	97	246	58	108	288	55	108	784	81	130	1031	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	246	58	108	288	55	108	784	81	130	1031	87
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	66	16	29	77	15	29	211	22	35	277	23
Total Analysis Volume [veh/h]	104	265	62	116	310	59	116	843	87	140	1109	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	19			38			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	130.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	28	35	0	28	35	0	12	67	0	20	75	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	34	34	12	30	30	8	74	74	14	79	79
g / C, Green / Cycle	0.10	0.22	0.22	0.08	0.20	0.20	0.05	0.49	0.49	0.09	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.04	0.07	0.17	0.04	0.07	0.24	0.05	0.08	0.31	0.06
s, saturation flow rate [veh/h]	1781	1870	1540	1781	1870	1503	1781	3560	1589	1781	3560	1544
c, Capacity [veh/h]	186	418	344	141	371	298	97	1748	780	163	1881	816
d1, Uniform Delay [s]	63.97	52.77	47.13	68.14	57.91	50.17	68.34	7.92	7.10	64.99	13.97	10.90
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	1.59	0.25	11.15	5.03	0.32	109.38	0.96	0.29	12.02	1.36	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.63	0.18	0.82	0.84	0.20	1.20	0.48	0.11	0.86	0.59	0.12
d, Delay for Lane Group [s/veh]	66.56	54.37	47.38	79.29	62.94	50.50	177.72	8.88	7.39	77.00	15.33	11.18
Lane Group LOS	E	D	D	E	E	D	F	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.96	9.36	1.94	4.88	11.96	1.91	6.53	3.23	0.64	5.67	8.37	1.09
50th-Percentile Queue Length [ft/ln]	99.09	233.91	48.50	121.88	299.08	47.85	163.30	80.78	16.02	141.84	209.26	27.23
95th-Percentile Queue Length [veh/ln]	7.13	14.37	3.49	8.50	17.64	3.45	11.28	5.82	1.15	9.58	13.12	1.96
95th-Percentile Queue Length [ft/ln]	178.37	359.32	87.30	212.40	440.89	86.13	281.89	145.40	28.84	239.50	327.88	49.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.56	54.37	47.38	79.29	62.94	50.50	177.72	8.88	7.39	77.00	15.33	11.18
Movement LOS	E	D	D	E	E	D	F	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.31			65.33			27.48			21.47		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	34.35											
Intersection LOS	C											
Intersection V/C	0.617											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.28	67.28	67.28	67.28
l_p,int, Pedestrian LOS Score for Intersectio	2.350	2.356	2.858	2.861
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	365	791	898
d_b, Bicycle Delay [s]	50.65	51.14	27.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.271	2.360	2.423	2.668
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	7.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.516

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	25	15	110	57	26	45	0	940	74	0	1216	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	15	110	57	26	45	0	940	74	0	1216	60
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	1.0000	0.9130	0.9130	1.0000	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	30	16	7	12	0	257	20	0	333	16
Total Analysis Volume [veh/h]	27	16	120	62	28	49	0	1030	81	0	1332	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			8			7			0		
v_di, Inbound Pedestrian Volume crossing m	0			7			8			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			36			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	143.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	37	0	0	37	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	16	16	16	13	13	107	107	107	107
g / C, Green / Cycle	0.11	0.11	0.11	0.09	0.09	0.72	0.72	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.08	0.03	0.05	0.29	0.05	0.37	0.04
s, saturation flow rate [veh/h]	1781	1870	1525	1781	1560	3560	1540	3560	1554
c, Capacity [veh/h]	194	204	166	156	136	2548	1102	2548	1112
d1, Uniform Delay [s]	60.48	60.08	64.43	64.75	65.74	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	0.16	5.79	1.64	3.63	0.48	0.13	0.77	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.08	0.72	0.40	0.56	0.40	0.07	0.52	0.06
d, Delay for Lane Group [s/veh]	60.81	60.24	70.22	66.39	69.37	0.48	0.13	0.77	0.10
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.96	0.56	4.71	2.34	3.00	0.17	0.04	0.27	0.03
50th-Percentile Queue Length [ft/ln]	23.92	14.05	117.87	58.62	75.11	4.23	0.99	6.82	0.79
95th-Percentile Queue Length [veh/ln]	1.72	1.01	8.28	4.22	5.41	0.30	0.07	0.49	0.06
95th-Percentile Queue Length [ft/ln]	43.06	25.30	206.90	105.51	135.20	7.62	1.78	12.28	1.42

Movement, Approach, & Intersection Results

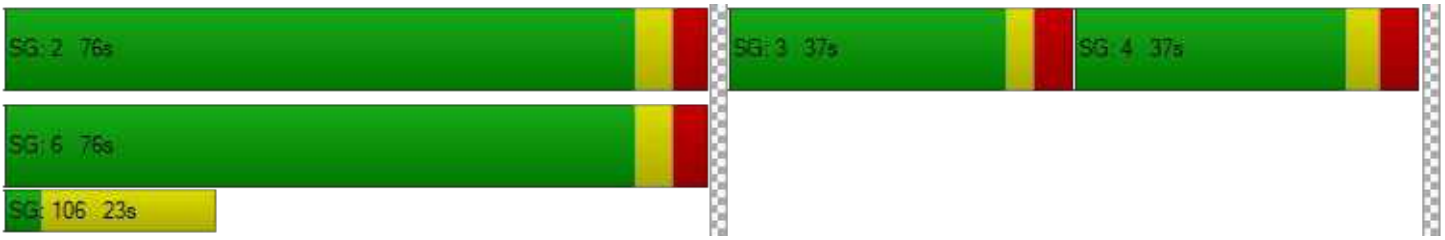
d_M, Delay for Movement [s/veh]	60.81	60.24	70.22	66.39	69.37	69.37	0.00	0.48	0.13	0.00	0.77	0.10
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	67.68			68.04			0.45			0.74		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.84											
Intersection LOS	A											
Intersection V/C	0.516											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.030	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	392	912	912
d_b, Bicycle Delay [s]	48.36	49.39	22.23	22.26
l_b,int, Bicycle LOS Score for Intersection	1.829	1.789	2.476	2.713
Bicycle LOS	A	A	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	54.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	351	70	404	218	57	112	919	576	242	976	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	351	70	404	218	57	112	919	576	242	976	18
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	99	20	114	61	16	32	259	162	68	275	5
Total Analysis Volume [veh/h]	72	395	79	455	245	64	126	1035	649	273	1099	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			10			0			10		
v_di, Inbound Pedestrian Volume crossing m	0			10			0			10		
v_co, Outbound Pedestrian Volume crossing	12			0			0			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			0			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	41			11			1			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		No			Yes		No	Yes		No	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	60	60	24	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.40	0.40	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.13	0.13	0.04	0.07	0.29	0.41	0.15	0.31	0.01
s, saturation flow rate [veh/h]	1846	1736	3459	1870	1503	1781	3560	1570	1781	3560	1512
c, Capacity [veh/h]	295	278	665	360	289	202	1425	628	285	1591	676
d1, Uniform Delay [s]	62.28	62.63	56.34	56.30	50.98	60.67	28.74	34.62	54.51	13.70	10.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.67	46.37	5.63	9.98	1.76	13.67	3.27	44.76	43.52	2.48	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.97	0.68	0.68	0.22	0.62	0.73	1.03	0.96	0.69	0.03
d, Delay for Lane Group [s/veh]	100.95	108.99	61.96	66.29	52.74	74.34	32.00	79.37	98.03	16.19	10.74
Lane Group LOS	F	F	E	E	D	E	C	F	F	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.65	13.79	8.58	9.67	2.19	5.15	13.58	28.13	12.75	6.75	0.20
50th-Percentile Queue Length [ft/ln]	341.23	344.86	214.40	241.70	54.80	128.63	339.61	703.33	318.74	168.76	5.02
95th-Percentile Queue Length [veh/ln]	19.71	19.89	13.38	14.77	3.95	8.87	19.63	37.74	18.61	11.01	0.36
95th-Percentile Queue Length [ft/ln]	492.70	497.14	334.46	369.18	98.65	221.63	490.72	943.42	465.14	275.29	9.04

Movement, Approach, & Intersection Results

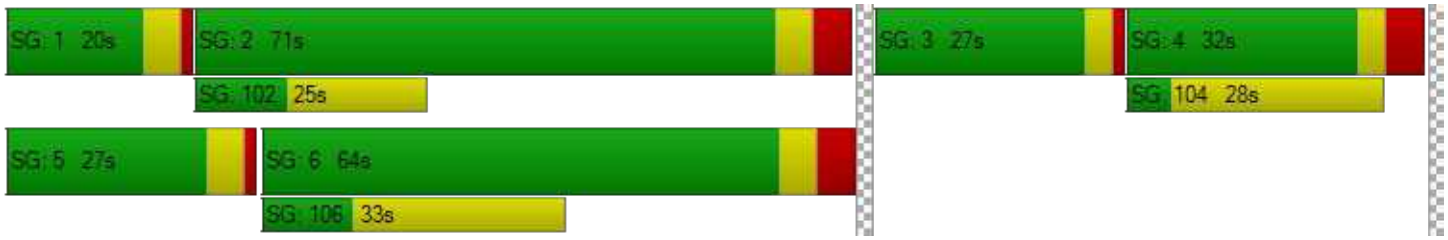
d_M, Delay for Movement [s/veh]	100.95	104.82	108.99	61.96	66.29	52.74	74.34	32.00	79.37	98.03	16.19	10.74
Movement LOS	F	F	F	E	E	D	E	C	F	F	B	B
d_A, Approach Delay [s/veh]	104.91			62.58			51.94			32.16		
Approach LOS	F			E			D			C		
d_I, Intersection Delay [s/veh]	54.05											
Intersection LOS	D											
Intersection V/C	0.877											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.267	2.814	0.000	2.964
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.90	52.38	29.54	25.35
l_b,int, Bicycle LOS Score for Intersection	2.010	2.820	3.053	2.708
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	6.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.412

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	38	16	33	6	4	50	29	1375	19	79	1470	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	16	33	6	4	50	29	1375	19	79	1470	25
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9500	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	4	9	2	1	13	8	368	5	21	393	7
Total Analysis Volume [veh/h]	41	17	35	6	4	54	31	1472	20	85	1574	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	6			4			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			4			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			0			3			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	40	40	40	40	40	40	24	86	86	24	86	86
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	15	15	15	7	116	116	9	118	118
g / C, Green / Cycle	0.10	0.10	0.10	0.05	0.77	0.77	0.06	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.06	0.01	0.03	0.02	0.28	0.28	0.05	0.30	0.30
s, saturation flow rate [veh/h]	1519	1420	1580	1781	3560	1855	1781	3560	1851
c, Capacity [veh/h]	188	182	160	87	2749	1432	106	2787	1449
d1, Uniform Delay [s]	64.37	60.95	62.76	67.86	0.00	0.00	68.18	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.01	0.12	1.24	2.44	0.36	0.70	12.92	0.39	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.05	0.34	0.36	0.36	0.36	0.80	0.38	0.38
d, Delay for Lane Group [s/veh]	66.38	61.08	64.00	70.30	0.36	0.70	81.10	0.39	0.75
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	0.36	2.03	1.19	0.14	0.28	3.53	0.15	0.30
50th-Percentile Queue Length [ft/ln]	88.71	9.02	50.66	29.79	3.46	6.93	88.26	3.79	7.59
95th-Percentile Queue Length [veh/ln]	6.39	0.65	3.65	2.15	0.25	0.50	6.35	0.27	0.55
95th-Percentile Queue Length [ft/ln]	159.68	16.24	91.18	53.63	6.23	12.47	158.87	6.82	13.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.38	66.38	66.38	61.08	61.08	64.00	70.30	0.47	0.70	81.10	0.51	0.75
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	66.38			63.54			1.90			4.58		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	6.19											
Intersection LOS	A											
Intersection V/C	0.412											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	64.41
l_p,int, Pedestrian LOS Score for Intersectio	1.804	1.996	0.000	3.205
Crosswalk LOS	A	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1052	1052
d_b, Bicycle Delay [s]	45.22	44.86	16.88	16.90
l_b,int, Bicycle LOS Score for Intersection	1.713	1.665	2.397	2.487
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	166	2	224	0	2	0	191	1212	4	2	1352	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	2	224	0	2	0	191	1212	4	2	1352	100
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	1	59	0	1	0	50	319	1	1	355	26
Total Analysis Volume [veh/h]	175	2	236	0	2	0	201	1274	4	2	1422	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			0			3			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	10	0	0	10	0	4	10	0	4	15	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	40	40	0	0	40	0	35	75	0	35	75	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	28	28	28	28	19	112	112	0	93	93
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.13	0.74	0.74	0.00	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.00	0.00	0.11	0.24	0.24	0.00	0.28	0.29
s, saturation flow rate [veh/h]	1415	1563	1142	1870	1781	3560	1867	1781	3560	1795
c, Capacity [veh/h]	291	290	79	347	225	2651	1390	5	2211	1115
d1, Uniform Delay [s]	58.67	58.73	0.00	49.84	61.39	0.14	0.14	74.61	5.91	5.92
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.98	5.77	0.00	0.01	11.63	0.31	0.60	45.45	0.69	1.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.82	0.00	0.01	0.89	0.32	0.32	0.40	0.46	0.46
d, Delay for Lane Group [s/veh]	60.66	64.50	0.00	49.85	73.02	0.45	0.74	120.06	6.59	7.29
Lane Group LOS	E	E	A	D	E	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.47	9.19	0.00	0.06	8.02	0.20	0.32	0.14	3.55	3.82
50th-Percentile Queue Length [ft/ln]	161.87	229.67	0.00	1.57	200.42	5.03	8.01	3.49	88.85	95.43
95th-Percentile Queue Length [veh/ln]	10.65	14.16	0.00	0.11	12.66	0.36	0.58	0.25	6.40	6.87
95th-Percentile Queue Length [ft/ln]	266.20	353.94	0.00	2.83	316.51	9.05	14.42	6.28	159.93	171.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.66	64.50	64.50	0.00	49.85	49.85	73.02	0.55	0.74	120.06	6.79	7.29
Movement LOS	E	E	E	A	D	D	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	62.87			49.85			10.40			6.98		
Approach LOS	E			D			B			A		
d_I, Intersection Delay [s/veh]	15.22											
Intersection LOS	B											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.969	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	905	905
d_b, Bicycle Delay [s]	44.97	44.86	22.51	22.52
l_b,int, Bicycle LOS Score for Intersection	2.241	1.563	2.373	2.401
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	4.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	17	1	38	3	0	3	85	1393	3	27	1548	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	6.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	1	38	3	0	3	85	1393	3	27	1548	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	10	1	0	1	22	367	1	7	407	3
Total Analysis Volume [veh/h]	18	1	40	3	0	3	89	1466	3	28	1629	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			5			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	35	0	0	35	0	15	105	0	15	105	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	9	122	122	3	116	116
g / C, Green / Cycle	0.09	0.09	0.09	0.06	0.81	0.81	0.02	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.00	0.05	0.27	0.27	0.02	0.30	0.30
s, saturation flow rate [veh/h]	1520	1589	1371	1781	3560	1868	1781	3560	1861
c, Capacity [veh/h]	182	141	158	109	2886	1514	37	2740	1432
d1, Uniform Delay [s]	62.96	63.87	62.49	68.02	0.00	0.00	72.60	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	1.08	0.10	13.32	0.31	0.60	27.36	0.43	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.28	0.04	0.81	0.33	0.33	0.76	0.39	0.39
d, Delay for Lane Group [s/veh]	63.21	64.95	62.58	81.33	0.31	0.60	99.96	0.43	0.81
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.69	1.49	0.22	3.70	0.13	0.25	1.34	0.16	0.32
50th-Percentile Queue Length [ft/ln]	17.28	37.29	5.49	92.53	3.13	6.25	33.59	4.05	8.10
95th-Percentile Queue Length [veh/ln]	1.24	2.68	0.40	6.66	0.23	0.45	2.42	0.29	0.58
95th-Percentile Queue Length [ft/ln]	31.10	67.12	9.88	166.55	5.63	11.26	60.47	7.29	14.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.21	63.21	64.95	62.58	62.58	62.58	81.33	0.41	0.60	99.96	0.56	0.81
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.39			62.58			5.03			2.23		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	4.78											
Intersection LOS	A											
Intersection V/C	0.405											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.010	1.750	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	373	373	1307	1307
d_b, Bicycle Delay [s]	49.62	49.62	9.04	9.04
l_b,int, Bicycle LOS Score for Intersection	1.657	1.570	2.417	2.479
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.534

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	378	412	77	275	231	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.93	1.92	2.00	1.94	1.90	1.74
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	412	77	275	231	95
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	110	21	74	62	25
Total Analysis Volume [veh/h]	405	441	82	294	247	102
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		12	
v_di, Inbound Pedestrian Volume crossing m	0		0		11	
v_co, Outbound Pedestrian Volume crossing	11		11		10	
v_ci, Inbound Pedestrian Volume crossing mi	12		10		11	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		91		16	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	12	12	2	18	8	8
g / C, Green / Cycle	0.35	0.35	0.06	0.53	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.22	0.29	0.05	0.16	0.14	0.07
s, saturation flow rate [veh/h]	1871	1540	1781	1871	1782	1449
c, Capacity [veh/h]	649	534	114	995	405	329
d1, Uniform Delay [s]	9.25	10.03	15.59	4.42	11.78	10.84
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.26	3.12	0.06	0.56	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.83	0.72	0.30	0.61	0.31
d, Delay for Lane Group [s/veh]	9.62	11.30	18.71	4.48	12.34	11.04
Lane Group LOS	A	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.87	2.32	0.63	0.63	1.39	0.52
50th-Percentile Queue Length [ft/ln]	46.77	57.94	15.68	15.68	34.65	13.02
95th-Percentile Queue Length [veh/ln]	3.37	4.17	1.13	1.13	2.49	0.94
95th-Percentile Queue Length [ft/ln]	84.19	104.29	28.22	28.22	62.37	23.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.62	11.30	18.71	4.48	12.34	11.04
Movement LOS	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	10.49		7.58		11.96	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	10.12					
Intersection LOS	B					
Intersection V/C	0.534					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	9.12	0.93
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.125	2.031
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1772	2363	1477
d_b, Bicycle Delay [s]	0.22	0.59	1.17
l_b,int, Bicycle LOS Score for Intersection	2.956	2.180	1.560
Bicycle LOS	C	B	A

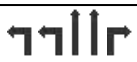
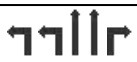
Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: Santa Cruz Ave/Sand Hill Rd

Control Type:	Signalized	Delay (sec / veh):	47.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	256	924	171	259	472	53	112	636	436	178	520	173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	256	924	171	259	472	53	112	636	436	178	520	173
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	237	44	66	121	14	29	163	112	46	133	44
Total Analysis Volume [veh/h]	262	947	175	265	484	54	115	652	447	182	533	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			3			1		
v_di, Inbound Pedestrian Volume crossing m	1			3			4			2		
v_co, Outbound Pedestrian Volume crossing	2			3			3			4		
v_ci, Inbound Pedestrian Volume crossing mi	3			4			2			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	33			33			29			49		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.6	4.3	4.3	3.6	4.3	4.3	3.6	4.1	4.1	3.6	4.1	4.1
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	19	47	47	20	48	48	13	53	53	20	60	60
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	4.3	4.3	2.6	4.3	4.3	2.6	4.1	4.1	2.6	4.1	4.1
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	6.30	6.30	4.60	6.30	6.30	4.60	6.10	6.10	4.60	6.10	6.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	4.30	4.30	2.60	4.30	4.30	2.60	4.10	4.10	2.60	4.10	4.10
g_i, Effective Green Time [s]	13	53	53	13	53	53	7	43	43	10	46	46
g / C, Green / Cycle	0.09	0.38	0.38	0.09	0.38	0.38	0.05	0.31	0.31	0.07	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.11	0.08	0.14	0.04	0.03	0.18	0.29	0.05	0.15	0.12
s, saturation flow rate [veh/h]	3459	3560	1534	3459	3560	1532	3459	3560	1527	3459	3560	1514
c, Capacity [veh/h]	312	1352	582	317	1357	584	162	1087	466	239	1166	496
d1, Uniform Delay [s]	62.70	36.69	30.27	62.57	31.04	27.76	65.78	41.36	47.00	64.03	37.23	35.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.33	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.03	3.04	1.32	5.85	0.73	0.31	5.58	0.53	24.99	4.95	0.28	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.70	0.30	0.84	0.36	0.09	0.71	0.60	0.96	0.76	0.46	0.36
d, Delay for Lane Group [s/veh]	68.73	39.74	31.59	68.42	31.77	28.08	71.35	41.89	71.99	68.98	37.51	36.06
Lane Group LOS	E	D	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.84	14.13	4.35	4.88	6.01	1.22	2.15	9.62	18.09	3.34	7.26	4.65
50th-Percentile Queue Length [ft/ln]	120.89	353.28	108.69	122.02	150.27	30.58	53.64	240.41	452.36	83.58	181.60	116.19
95th-Percentile Queue Length [veh/ln]	8.44	20.30	7.77	8.50	10.03	2.20	3.86	14.70	25.07	6.02	11.68	8.18
95th-Percentile Queue Length [ft/ln]	211.06	507.40	194.17	212.60	250.79	55.04	96.54	367.55	626.77	150.44	292.11	204.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.73	39.74	31.59	68.42	31.77	28.08	71.35	41.89	71.99	68.98	37.51	36.06
Movement LOS	E	D	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	44.20			43.62			55.77			43.64		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	47.24											
Intersection LOS	D											
Intersection V/C	0.741											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.44	59.44	59.44	59.44
l_p,int, Pedestrian LOS Score for Intersectio	2.966	3.085	2.970	2.917
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	596	670	770
d_b, Bicycle Delay [s]	35.81	35.09	31.41	27.14
l_b,int, Bicycle LOS Score for Intersection	2.701	2.222	2.561	2.296
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	92.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.264

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	134	15	238	0	17	169	11	0	10	178	279
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	134	15	238	0	17	169	11	0	10	178	279
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	4	66	0	5	47	3	0	3	49	78
Total Analysis Volume [veh/h]	0	149	17	264	0	19	188	12	0	11	198	310
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	537	397	519
Degree of Utilization, x	0.80	0.55	1.10

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.67	3.23	17.20
95th-Percentile Queue Length [ft]	191.68	80.65	429.90
Approach Delay [s/veh]	31.41	22.68	98.44
Approach LOS	D	C	F
Intersection Delay [s/veh]	92.39		
Intersection LOS	F		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	407	94	3	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	407	94	3	0	0	0	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	26	1	0	0	0	0	0
Total Analysis Volume [veh/h]	452	104	3	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	559	398
Degree of Utilization, x	1.26	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	23.52	0.00
95th-Percentile Queue Length [ft]	587.99	0.00
Approach Delay [s/veh]	160.98	0.00
Approach LOS	F	A
Intersection Delay [s/veh]	92.39	
Intersection LOS	F	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	131	387	119	46	421	58	96	100	42	64	58	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	387	119	46	421	58	96	100	42	64	58	93
Peak Hour Factor	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	113	35	13	123	17	28	29	12	19	17	27
Total Analysis Volume [veh/h]	154	454	140	54	494	68	113	117	49	75	68	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	27			0			0			27		
v_di, Inbound Pedestrian Volume crossing m	27			0			0			27		
v_co, Outbound Pedestrian Volume crossing	6			0			6			0		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			6			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	26			2			7			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	55	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	23	30	21	16	16	16
g / C, Green / Cycle	0.54	0.43	0.54	0.38	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.15	0.34	0.06	0.31	0.25	0.06	0.11
s, saturation flow rate [veh/h]	1062	1767	961	1825	1138	1219	1559
c, Capacity [veh/h]	538	755	479	695	427	147	459
d1, Uniform Delay [s]	8.84	13.55	8.40	15.20	18.81	15.81	15.41
k, delay calibration	0.23	0.26	0.11	0.24	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	4.41	0.10	4.91	1.70	2.74	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.79	0.11	0.81	0.65	0.51	0.39
d, Delay for Lane Group [s/veh]	9.46	17.97	8.50	20.11	20.50	18.55	15.94
Lane Group LOS	A	B	A	C	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.75	5.94	0.23	6.08	3.32	0.81	1.68
50th-Percentile Queue Length [ft/ln]	18.63	148.59	5.73	151.95	83.07	20.31	42.01
95th-Percentile Queue Length [veh/ln]	1.34	9.94	0.41	10.12	5.98	1.46	3.02
95th-Percentile Queue Length [ft/ln]	33.53	248.55	10.32	253.03	149.53	36.56	75.61

Movement, Approach, & Intersection Results

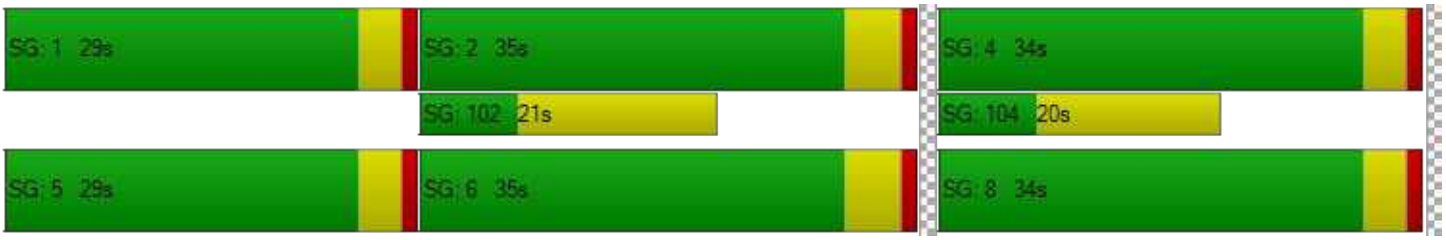
d_M, Delay for Movement [s/veh]	9.46	17.97	17.97	8.50	20.11	20.11	20.50	20.50	20.50	18.55	15.94	15.94
Movement LOS	A	B	B	A	C	C	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	16.21			19.10			20.50			16.72		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	17.85											
Intersection LOS	B											
Intersection V/C	0.651											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.49	0.00	17.49	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.628	0.000	1.942	0.000
Crosswalk LOS	B	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1095	1095	1095	1095
d_b, Bicycle Delay [s]	5.68	5.61	5.62	5.61
l_b,int, Bicycle LOS Score for Intersection	2.794	2.576	2.020	1.975
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		35.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	454	524	65	260	980	551
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	524	65	260	980	551
Peak Hour Factor	0.9660	0.9660	0.9660	0.9660	0.9660	0.9660
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	136	17	67	254	143
Total Analysis Volume [veh/h]	470	542	67	269	1014	570
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	43		21		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	5	5	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	55	25	55	60	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	31	31	31	20	55	76	76
g / C, Green / Cycle	0.22	0.22	0.22	0.14	0.39	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.18	0.04	0.17	0.28	0.37
s, saturation flow rate [veh/h]	1781	1832	1870	1781	1574	3560	1561
c, Capacity [veh/h]	393	404	412	249	613	1931	846
d1, Uniform Delay [s]	52.09	52.09	52.09	53.73	31.34	20.47	22.83
k, delay calibration	0.11	0.11	0.11	0.11	0.30	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.78	4.66	4.56	0.57	1.37	1.03	4.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.84	0.84	0.27	0.44	0.53	0.67
d, Delay for Lane Group [s/veh]	56.87	56.74	56.65	54.30	32.71	21.50	27.09
Lane Group LOS	E	E	E	D	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.39	11.70	11.93	2.15	6.91	10.51	13.84
50th-Percentile Queue Length [ft/ln]	284.71	292.46	298.29	53.75	172.63	262.87	345.97
95th-Percentile Queue Length [veh/ln]	16.92	17.31	17.60	3.87	11.21	15.83	19.94
95th-Percentile Queue Length [ft/ln]	423.07	432.69	439.92	96.76	280.37	395.82	498.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.83	56.69	54.30	32.71	21.50	27.09
Movement LOS	E	E	D	C	C	C
d_A, Approach Delay [s/veh]	56.75		37.01		23.51	
Approach LOS	E		D		C	
d_I, Intersection Delay [s/veh]	36.53					
Intersection LOS	D					
Intersection V/C	0.735					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	721	299	788
d_b, Bicycle Delay [s]	29.26	51.15	25.89
l_b,int, Bicycle LOS Score for Intersection	2.395	1.560	2.866
Bicycle LOS	B	A	C

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Base Volume Input [veh/h]	1411	0	0	771	734	673
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1411	0	0	771	734	673
Peak Hour Factor	0.9640	1.0000	1.0000	0.9640	0.9640	0.9640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	366	0	0	200	190	175
Total Analysis Volume [veh/h]	1464	0	0	800	761	698
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	60	0	0	60	60	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	60	60	26	26
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.41	0.22	0.22	0.25
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2370	2370	983	800
d1, Uniform Delay [s]	8.55	6.50	29.60	30.70
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.22	0.39	0.50	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.34	0.77	0.87
d, Delay for Lane Group [s/veh]	9.77	6.88	30.10	31.91
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.20	2.95	7.40	7.11
50th-Percentile Queue Length [ft/ln]	179.91	73.68	185.09	177.83
95th-Percentile Queue Length [veh/ln]	11.60	5.31	11.87	11.49
95th-Percentile Queue Length [ft/ln]	289.90	132.63	296.64	287.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.77	0.00	0.00	6.88	30.10	31.91
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	9.77		6.88		30.96	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	17.46					
Intersection LOS	B					
Intersection V/C	0.715					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.49	34.71
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.855	2.486
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	564	1239
d_b, Bicycle Delay [s]	23.25	23.22	6.52
l_b,int, Bicycle LOS Score for Intersection	2.767	2.220	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	22.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	208	23	213	154	13	18	169	415	21	172	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	208	23	213	154	13	18	169	415	21	172	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	55	6	56	41	3	5	45	110	6	45	3
Total Analysis Volume [veh/h]	12	220	24	225	163	14	19	179	439	22	182	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	418	448	431	463	485	540	450
Degree of Utilization, x	0.03	0.54	0.52	0.38	0.41	0.81	0.48

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.09	3.19	2.94	1.77	1.96	8.00	2.55
95th-Percentile Queue Length [ft]	2.22	79.79	73.52	44.28	49.12	200.04	63.66
Approach Delay [s/veh]	19.56		17.79		26.94		18.16
Approach LOS	C		C		D		C
Intersection Delay [s/veh]	22.00						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.998

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	850	715	0	1786	542	0	0	0	543	0	342
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	850	715	0	1786	542	0	0	0	543	0	342
Peak Hour Factor	1.0000	0.9190	0.9190	1.0000	0.9190	0.9190	1.0000	1.0000	1.0000	0.9190	1.0000	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	231	195	0	486	147	0	0	0	148	0	93
Total Analysis Volume [veh/h]	0	925	778	0	1943	590	0	0	0	591	0	372
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	23	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	56	56	56		16	16
g / C, Green / Cycle	0.70	0.70	0.70		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.18	0.38	0.63		0.17	0.13
s, saturation flow rate [veh/h]	5094	5094	941		3459	2813
c, Capacity [veh/h]	3542	3542	654		707	575
d1, Uniform Delay [s]	4.52	5.99	9.92		30.46	29.11
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.18	0.62	17.93		2.71	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.55	0.90		0.84	0.65
d, Delay for Lane Group [s/veh]	4.70	6.60	27.85		33.17	30.34
Lane Group LOS	A	A	C		C	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	1.52	4.26	9.39		5.53	3.26
50th-Percentile Queue Length [ft/ln]	38.00	106.58	234.80		138.24	81.60
95th-Percentile Queue Length [veh/ln]	2.74	7.65	14.42		9.39	5.88
95th-Percentile Queue Length [ft/ln]	68.41	191.23	360.45		234.66	146.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	4.70	0.00	0.00	6.60	27.85	0.00	0.00	0.00	33.17	0.00	30.34
Movement LOS		A			A	C				C		C
d_A, Approach Delay [s/veh]	2.65			11.55			0.00			32.08		
Approach LOS	A			B			A			C		
d_I, Intersection Delay [s/veh]	14.16											
Intersection LOS	B											
Intersection V/C	0.998											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.041	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1327	1327	0	476
d_b, Bicycle Delay [s]	4.55	4.53	39.95	23.21
l_b,int, Bicycle LOS Score for Intersection	2.068	2.953	4.132	1.560
Bicycle LOS	B	C	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

Intersection Setup

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Base Volume Input [veh/h]	0	1028	345	0	1652	446	0	0	0	663	0	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1028	345	0	1652	446	0	0	0	663	0	606
Peak Hour Factor	1.0000	0.9580	0.9580	1.0000	0.9580	0.9580	1.0000	1.0000	1.0000	0.9580	1.0000	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	268	90	0	431	116	0	0	0	173	0	158
Total Analysis Volume [veh/h]	0	1073	360	0	1724	466	0	0	0	692	0	633
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	50	0	0	58	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	50	0	0	50	0	0	0	0	20	0	10
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	46	46	56		16	26
g / C, Green / Cycle	0.58	0.58	0.70		0.20	0.32
(v / s)_i Volume / Saturation Flow Rate	0.21	0.23	0.61		0.20	0.22
s, saturation flow rate [veh/h]	5094	1589	2828		3459	2813
c, Capacity [veh/h]	2936	916	1980		692	911
d1, Uniform Delay [s]	9.10	9.29	9.22		32.02	23.62
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.35	1.27	5.59		15.94	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.39	0.87		1.00	0.70
d, Delay for Lane Group [s/veh]	9.45	10.55	14.81		47.96	24.59
Lane Group LOS	A	B	B		F	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.06	3.37	6.59		7.97	5.08
50th-Percentile Queue Length [ft/ln]	76.55	84.22	164.85		199.37	126.97
95th-Percentile Queue Length [veh/ln]	5.51	6.06	10.81		12.61	8.77
95th-Percentile Queue Length [ft/ln]	137.79	151.59	270.13		315.19	219.37

Movement, Approach, & Intersection Results

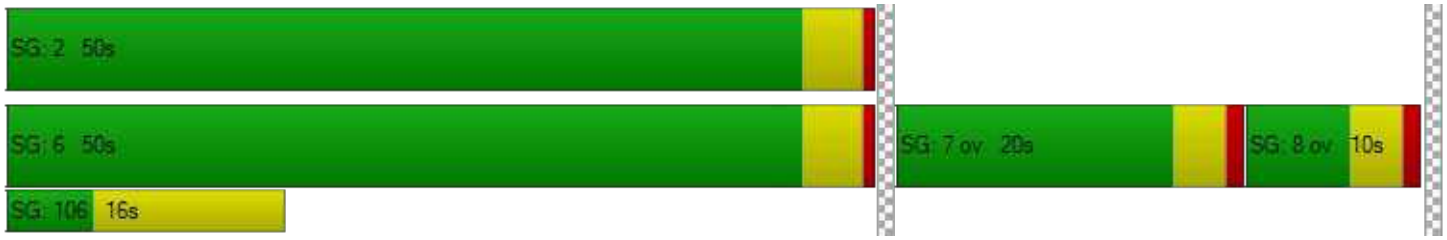
d_M, Delay for Movement [s/veh]	0.00	9.45	10.55	0.00	14.81	0.00	0.00	0.00	0.00	47.96	0.00	24.59
Movement LOS		A	B		B					F		C
d_A, Approach Delay [s/veh]	9.73			11.77			0.00			36.80		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	18.51											
Intersection LOS	B											
Intersection V/C	0.861											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.52	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1400	0	400
d_b, Bicycle Delay [s]	7.23	3.62	40.01	25.61
l_b,int, Bicycle LOS Score for Intersection	2.348	2.508	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.379

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	10	224	27	148	155	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	224	27	148	155	5
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	65	8	43	45	1
Total Analysis Volume [veh/h]	12	260	31	172	180	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	627	687	815	687
Degree of Utilization, x	0.02	0.38	0.25	0.27

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	1.77	0.98	1.09
95th-Percentile Queue Length [ft]	1.46	44.24	24.54	27.36
Approach Delay [s/veh]	10.99		8.87	10.17
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.11			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	38.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.318

Intersection Setup

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	778	121	22	463	51	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	778	121	22	463	51	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	195	30	6	116	13	6
Total Analysis Volume [veh/h]	778	121	22	463	51	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.03	0.00	0.32	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	9.79	0.00	38.35	25.75
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.04	1.64	1.64
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.93	0.93	41.09	41.09
d_A, Approach Delay [s/veh]	0.00		0.44		34.55	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.88					
Intersection LOS	E					

Generated with PTV VISTRO

Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	22.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	527	273	0	470	15	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	527	273	0	470	15	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	68	0	118	4	1
Total Analysis Volume [veh/h]	527	273	0	470	15	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	9.37	0.00	22.22	13.97
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.89	5.89
d_A, Approach Delay [s/veh]	0.00		0.00		20.84	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.29					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	64.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.992

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	128	16	253	18	55	213	6	9	182	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	128	16	253	18	55	213	6	9	182	26
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	44	5	87	6	19	73	2	3	62	9
Total Analysis Volume [veh/h]	41	188	175	22	347	25	75	292	8	12	249	36
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	408	398	392	377
Degree of Utilization, x	0.99	0.99	0.96	0.79

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	12.10	11.95	10.89	6.69
95th-Percentile Queue Length [ft]	302.44	298.64	272.33	167.17
Approach Delay [s/veh]	72.78	73.75	66.62	40.15
Approach LOS	F	F	F	E
Intersection Delay [s/veh]	64.87			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	20.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	220	102	109	255	169	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	102	109	255	169	96
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	33	35	82	54	31
Total Analysis Volume [veh/h]	282	131	140	327	217	123
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	633	617	580
Degree of Utilization, x	0.65	0.76	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.80	6.84	3.78
95th-Percentile Queue Length [ft]	120.03	170.98	94.62
Approach Delay [s/veh]	18.74	24.68	17.66
Approach LOS	C	C	C
Intersection Delay [s/veh]	20.72		
Intersection LOS	C		

Intersection Level Of Service Report
Intersection 292: Ravenswood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	59.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.162

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	3	865	0	0	557	1	0	0	0	10	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	865	0	0	557	1	0	0	0	10	0	27
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	254	0	0	164	0	0	0	0	3	0	8
Total Analysis Volume [veh/h]	4	1018	0	0	655	1	0	0	0	12	0	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.16	0.00	0.07
d_M, Delay for Movement [s/veh]	8.87	0.00	0.00	10.28	0.00	0.00	58.46	43.52	17.50	59.07	49.05	18.29
Movement LOS	A	A	A	B	A	A	F	E	C	F	E	C
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.86	0.86
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	21.45	21.45	21.45
d_A, Approach Delay [s/veh]	0.03			0.00			39.83			29.41		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	0.77											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.390

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	18	5	30	10	4	14	13	271	3	10	129	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	5	30	10	4	14	13	271	3	10	129	15
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	8	3	1	4	4	76	1	3	36	4
Total Analysis Volume [veh/h]	20	6	34	11	4	16	15	304	3	11	145	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	747	735	826	807
Degree of Utilization, x	0.08	0.04	0.39	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.26	0.13	1.86	0.81
95th-Percentile Queue Length [ft]	6.53	3.30	46.56	20.27
Approach Delay [s/veh]	8.24	8.11	10.12	8.68
Approach LOS	A	A	B	A
Intersection Delay [s/veh]	9.39			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	7.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	321	7	4	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	321	7	4	159
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	80	2	1	40
Total Analysis Volume [veh/h]	0	0	321	7	4	159
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.74	10.02	0.00	0.00	7.93	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.17	0.17
d_A, Approach Delay [s/veh]	10.88		0.00		0.19	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.06					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.371

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	2	3	325	1	1	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	3	325	1	1	158
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	81	0	0	40
Total Analysis Volume [veh/h]	2	3	325	1	1	158
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	769	878	846
Degree of Utilization, x	0.01	0.37	0.19

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.02	1.73	0.69
95th-Percentile Queue Length [ft]	0.49	43.21	17.22
Approach Delay [s/veh]	7.71	9.50	8.24
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.07		
Intersection LOS	A		

Vistro File: P:\...\Parkline_Vistro_new Variant_PM_2024.03.12.vistro
Report File: P:\...\BPPM.pdf

Scenario 18 Near-Term (2027) Plus Project PM
3/12/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Left	0.785	23.2	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	NEB Left	0.642	24.3	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	SB Left	0.705	34.1	C
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.510	21.8	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.750	60.1	E
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NEB Left	0.788	90.5	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	1.886	852.3	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NEB Thru	0.919	101.6	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	EB Thru	0.920	125.4	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	WB Right	1.581	328.8	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.096	55.0	E
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Right	1.652	257.6	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.163	219.9	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	NEB Left	0.871	14.4	B
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.598	14.4	B
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.895	19.8	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	SB Left	0.872	25.3	C
			HCM 7th				

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	SEB Left	0.800	62.0	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SWB Thru	0.682	77.4	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.635	17.7	B
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	6.806	36.7	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	SEB Left	0.730	35.8	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.668	26.2	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.548	7.6	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NWB Left	0.815	42.6	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.552	9.3	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.672	18.0	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.461	5.7	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.604	11.8	B
39	Sand Hill Rd/Santa Cruz Ave	Signalized	HCM 7th Edition	NWB Left	0.694	41.9	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	NB Right	0.781	19.0	C
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Left	0.614	14.6	B
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	NEB Thru	0.723	39.3	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 7th Edition	NWB Left	0.863	20.8	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	SWB Left	0.922	27.5	D
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.692	24.0	C
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.707	92.9	F
224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.397	10.3	B

250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.300	35.2	E
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Left	0.171	28.3	D
254	Laurel Street and Glenwood Ave	All-way stop	HCM 7th Edition	NEB Thru	0.353	10.5	B
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	SWB Thru	0.433	10.9	B
292	Ravesnwood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	NEB Left	0.048	73.2	F
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.388	9.6	A
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SEB Left	0.010	8.0	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.400	9.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1038	950	279	1533	556
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1038	950	279	1533	556
Peak Hour Factor	1.0000	0.9720	0.9720	1.0000	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	267	244	70	394	143
Total Analysis Volume [veh/h]	0	1068	977	279	1577	572
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	100	100	0	100	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	40	40	0	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	5	0
Pedestrian Clearance [s]	0	12	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	48	45	48	48
g / C, Green / Cycle	0.48	0.45	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.46	0.36
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	1901	1617	1659	763
d1, Uniform Delay [s]	18.80	20.54	24.90	21.16
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	1.68	1.55	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.60	0.95	0.75
d, Delay for Lane Group [s/veh]	20.01	22.23	26.45	21.72
Lane Group LOS	C	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.67	8.49	17.14	10.47
50th-Percentile Queue Length [ft/ln]	216.80	212.26	428.57	261.70
95th-Percentile Queue Length [veh/ln]	13.50	13.27	23.93	15.77
95th-Percentile Queue Length [ft/ln]	337.54	331.72	598.33	394.35

Movement, Approach, & Intersection Results

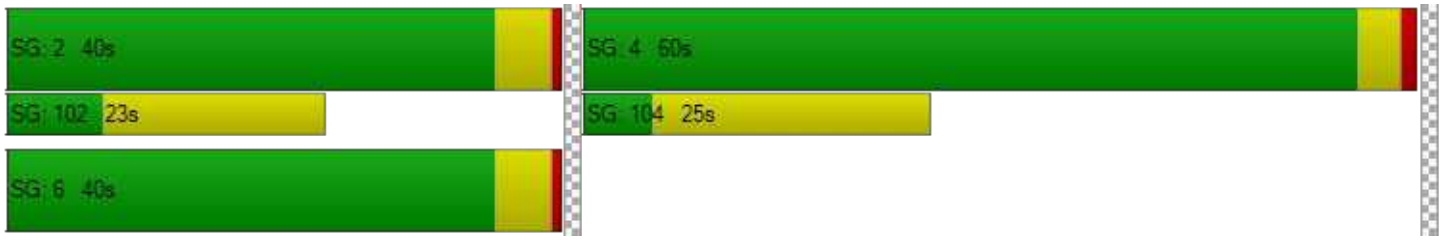
d_M, Delay for Movement [s/veh]	0.00	20.01	22.23	0.00	26.45	21.72
Movement LOS		C	C		C	C
d_A, Approach Delay [s/veh]	20.01		22.23		25.19	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	23.18					
Intersection LOS	C					
Intersection V/C	0.785					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.43	0.00	39.63
l_p,int, Pedestrian LOS Score for Intersectio	2.882	0.000	2.643
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1117
d_b, Bicycle Delay [s]	20.95	20.90	9.74
l_b,int, Bicycle LOS Score for Intersection	2.441	2.366	1.560
Bicycle LOS	B	B	A

Sequence

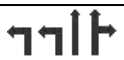
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	39	1234	2	73	1061	246	15	8	257	272	5	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1234	2	73	1061	246	15	8	257	272	5	2
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	320	1	19	275	64	4	2	67	71	1	1
Total Analysis Volume [veh/h]	40	1281	2	76	1102	255	16	8	267	282	5	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	57	0	20	62	0	0	36	0	0	32	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	145	145	145	145	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	95	95	7	96	96	18	18	17	17
g / C, Green / Cycle	0.04	0.66	0.66	0.05	0.66	0.66	0.13	0.13	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.02	0.37	0.38	0.01	0.09	0.08	0.08
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1735	1810	2813	1781	1781
c, Capacity [veh/h]	76	2338	1227	165	1237	1148	226	351	205	205
d1, Uniform Delay [s]	67.83	11.17	11.17	67.09	13.20	13.38	56.17	61.24	61.64	61.64
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.10	0.43	0.82	0.74	1.85	2.11	0.15	2.54	3.25	3.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.36	0.36	0.46	0.56	0.58	0.11	0.76	0.70	0.70
d, Delay for Lane Group [s/veh]	71.93	11.60	11.99	67.83	15.05	15.49	56.32	63.77	64.89	64.89
Lane Group LOS	E	B	B	E	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	6.04	6.48	1.39	12.29	11.90	0.80	4.92	5.37	5.37
50th-Percentile Queue Length [ft/ln]	38.40	151.12	161.94	34.63	307.22	297.43	20.03	123.12	134.13	134.13
95th-Percentile Queue Length [veh/ln]	2.76	10.08	10.65	2.49	18.04	17.55	1.44	8.56	9.16	9.16
95th-Percentile Queue Length [ft/ln]	69.12	251.92	266.28	62.33	450.95	438.85	36.05	214.11	229.10	229.09

Movement, Approach, & Intersection Results

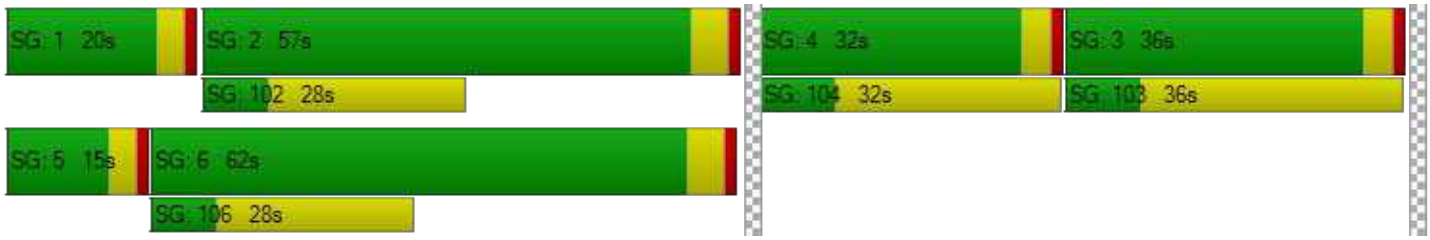
d_M, Delay for Movement [s/veh]	71.93	11.74	11.99	67.83	15.21	15.49	56.32	56.32	63.77	64.89	64.89	64.89
Movement LOS	E	B	B	E	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.56			18.05			63.16			64.89		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	24.26											
Intersection LOS	C											
Intersection V/C	0.642											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.93	60.93	61.85	61.85
l_p,int, Pedestrian LOS Score for Intersectio	2.938	3.146	2.383	2.123
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	718	787	439	384
d_b, Bicycle Delay [s]	29.77	26.66	44.13	47.30
l_b,int, Bicycle LOS Score for Intersection	2.287	2.742	2.040	2.036
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.705

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	220	784	33	16	777	359	438	12	126	69	39	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	784	33	16	777	359	438	12	126	69	39	45
Peak Hour Factor	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	214	9	4	212	98	119	3	34	19	11	12
Total Analysis Volume [veh/h]	240	855	36	17	847	391	478	13	137	75	43	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	50	50	50	50	50	50	50	50	50	0	50	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	45	45	22	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	91	91	4	75	75	25	25	25	13	13
g / C, Green / Cycle	0.14	0.65	0.65	0.03	0.53	0.53	0.18	0.18	0.18	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.24	0.01	0.35	0.36	0.14	0.14	0.09	0.04	0.05
s, saturation flow rate [veh/h]	1781	1870	1840	1781	1870	1642	1781	1785	1556	1781	1689
c, Capacity [veh/h]	255	1210	1190	51	996	874	313	313	273	163	155
d1, Uniform Delay [s]	59.46	11.50	11.51	66.73	23.49	23.85	55.23	55.23	52.12	60.35	61.14
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.16	0.87	0.89	1.39	3.34	4.10	3.24	3.23	1.06	1.49	2.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.37	0.37	0.33	0.65	0.67	0.78	0.78	0.50	0.46	0.59
d, Delay for Lane Group [s/veh]	66.62	12.38	12.40	68.12	26.82	27.96	58.48	58.46	53.18	61.85	63.83
Lane Group LOS	E	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.89	6.55	6.47	0.62	15.94	14.77	8.65	8.67	4.49	2.63	3.30
50th-Percentile Queue Length [ft/ln]	222.33	163.71	161.70	15.38	398.58	369.17	216.27	216.74	112.31	65.69	82.42
95th-Percentile Queue Length [veh/ln]	13.78	10.75	10.64	1.11	22.49	21.07	13.47	13.50	7.97	4.73	5.93
95th-Percentile Queue Length [ft/ln]	344.60	268.63	265.98	27.68	562.29	526.72	336.86	337.47	199.21	118.24	148.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.62	12.39	12.40	68.12	27.09	27.96	58.47	58.46	53.18	61.85	63.83	63.83
Movement LOS	E	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	23.90			27.91			57.32			62.94		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	34.13											
Intersection LOS	C											
Intersection V/C	0.705											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.47	59.47	59.47	59.47
l_p,int, Pedestrian LOS Score for Intersectio	2.889	3.044	2.417	2.024
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	457	468
d_b, Bicycle Delay [s]	35.48	35.50	41.76	41.10
l_b,int, Bicycle LOS Score for Intersection	2.493	2.595	2.596	1.835
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.510

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	3	866	58	147	740	72	78	16	5	43	7	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	866	58	147	740	72	78	16	5	43	7	181
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	223	15	38	191	19	20	4	1	11	2	47
Total Analysis Volume [veh/h]	3	892	60	151	762	74	80	16	5	44	7	186
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing m	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	4.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	105	70	105	35	105	70	45	45	45	0	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	0	7	0	0	0	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	0	17	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	96	96	17	115	115	30	30
g / C, Green / Cycle	0.64	0.64	0.11	0.77	0.77	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.08	0.23	0.23	0.13	0.14
s, saturation flow rate [veh/h]	1865	1657	1781	1870	1803	804	1694
c, Capacity [veh/h]	1213	1056	199	1438	1387	204	368
d1, Uniform Delay [s]	13.50	13.53	64.66	5.18	5.18	56.85	55.80
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.05	1.26	5.89	0.52	0.55	3.92	4.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.43	0.76	0.30	0.30	0.49	0.64
d, Delay for Lane Group [s/veh]	14.55	14.78	70.56	5.70	5.73	60.77	59.98
Lane Group LOS	B	B	E	A	A	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.66	7.78	5.92	3.79	3.69	3.92	8.79
50th-Percentile Queue Length [ft/ln]	216.40	194.56	147.95	94.74	92.16	98.02	219.80
95th-Percentile Queue Length [veh/ln]	13.48	12.36	9.91	6.82	6.64	7.06	13.65
95th-Percentile Queue Length [ft/ln]	337.03	308.94	247.70	170.54	165.88	176.43	341.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.55	14.65	14.78	70.56	5.71	5.73	60.77	60.77	60.77	59.98	59.98	59.98
Movement LOS	B	B	B	E	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	14.66			15.64			60.77			59.98		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	21.84											
Intersection LOS	C											
Intersection V/C	0.510											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	99.9	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	64.39	8.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.926	1.737	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	866	1332	537	537
d_b, Bicycle Delay [s]	24.14	8.36	40.20	40.12
l_b,int, Bicycle LOS Score for Intersection	2.347	2.374	1.726	1.951
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	60.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	195	519	549	777	401	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	519	549	777	401	89
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	137	144	204	106	23
Total Analysis Volume [veh/h]	205	546	578	818	422	94
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing m	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lag	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	35	34	34	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	39	38	38	91	53	0
Vehicle Extension [s]	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.5	2.5	6.1	0.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	Yes	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	4.50	8.10	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.50	6.10	0.00
g_i, Effective Green Time [s]	36	74	33	84	52
g / C, Green / Cycle	0.27	0.57	0.26	0.65	0.40
(v / s)_i Volume / Saturation Flow Rate	0.12	0.35	0.32	0.44	0.29
s, saturation flow rate [veh/h]	1781	1576	1781	1870	1796
c, Capacity [veh/h]	489	864	459	1211	723
d1, Uniform Delay [s]	38.67	20.27	48.27	14.34	32.58
k, delay calibration	0.04	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	3.51	133.59	3.03	5.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.63	1.26	0.68	0.71
d, Delay for Lane Group [s/veh]	38.88	23.78	181.86	17.37	38.52
Lane Group LOS	D	C	F	B	D
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.43	12.03	31.67	14.99	14.57
50th-Percentile Queue Length [ft/ln]	135.78	300.87	791.77	374.73	364.16
95th-Percentile Queue Length [veh/ln]	9.25	17.72	46.44	21.34	20.83
95th-Percentile Queue Length [ft/ln]	231.33	443.10	1161.10	533.47	520.64

Movement, Approach, & Intersection Results

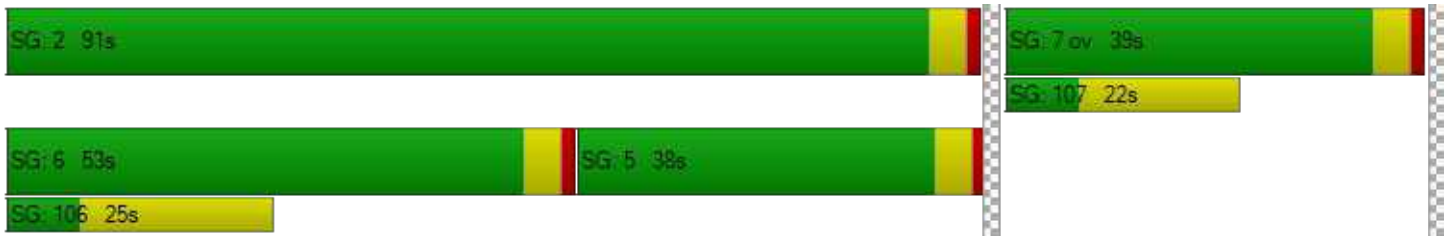
d_M, Delay for Movement [s/veh]	38.88	23.78	181.86	17.37	38.52	38.52
Movement LOS	D	C	F	B	D	D
d_A, Approach Delay [s/veh]	27.90		85.48		38.52	
Approach LOS	C		F		D	
d_I, Intersection Delay [s/veh]	60.14					
Intersection LOS	E					
Intersection V/C	0.750					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	54.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.420	2.821	0.000
Crosswalk LOS	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	531	1331	746
d_b, Bicycle Delay [s]	35.28	7.38	25.67
l_b,int, Bicycle LOS Score for Intersection	1.560	3.863	2.411
Bicycle LOS	A	D	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	90.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	326	107	102	70	24	290	76	703	74	371	510	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	326	107	102	70	24	290	76	703	74	371	510	25
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	28	27	19	6	77	20	187	20	99	136	7
Total Analysis Volume [veh/h]	347	114	109	74	26	309	81	748	79	395	543	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing m	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	35	35	35	50	35	50	10	35	35	10	50	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	53	38	53	82	38	82	10	53	38	39	82	0
Vehicle Extension [s]	3.0	3.0	3.0	2.5	3.0	2.5	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	6.1	0.0	6.1	0.0	0.0	0.0	0.5	6.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		Yes	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	8.10	8.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	6.10	6.10
g_i, Effective Green Time [s]	40	40	40	40	8	51	51	32	70	70
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.06	0.39	0.39	0.25	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.33	0.13	0.12	0.20	0.05	0.21	0.05	0.22	0.15	0.15
s, saturation flow rate [veh/h]	1045	1697	828	1545	1781	3560	1525	1781	1870	1830
c, Capacity [veh/h]	184	527	305	479	110	1393	596	443	1000	979
d1, Uniform Delay [s]	59.39	35.59	43.57	38.38	59.97	30.50	25.35	47.17	16.60	16.62
k, delay calibration	0.50	0.11	0.11	0.26	0.12	0.50	0.50	0.36	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	417.83	0.54	0.62	3.42	10.57	1.49	0.46	17.86	0.72	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.88	0.42	0.33	0.64	0.74	0.54	0.13	0.89	0.29	0.29
d, Delay for Lane Group [s/veh]	477.22	36.13	44.19	41.79	70.54	31.99	25.81	65.03	17.33	17.36
Lane Group LOS	F	D	D	D	E	C	C	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	27.57	5.85	2.87	8.91	2.93	9.22	1.64	14.39	4.84	4.77
50th-Percentile Queue Length [ft/ln]	689.33	146.33	71.80	222.70	73.34	230.39	41.09	359.75	120.99	119.20
95th-Percentile Queue Length [veh/ln]	46.68	9.82	5.17	13.80	5.28	14.19	2.96	20.61	8.45	8.35
95th-Percentile Queue Length [ft/ln]	1167.05	245.53	129.24	345.07	132.01	354.85	73.97	515.28	211.18	208.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	477.22	36.13	36.13	44.19	44.19	41.79	70.54	31.99	25.81	65.03	17.34	17.36
Movement LOS	F	D	D	D	D	D	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	304.66			42.38			34.89			36.86		
Approach LOS	F			D			C			D		
d_I, Intersection Delay [s/veh]	90.55											
Intersection LOS	F											
Intersection V/C	0.788											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.46	54.46	54.46	54.46
l_p,int, Pedestrian LOS Score for Intersectio	2.110	2.282	2.982	3.350
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	746	1192
d_b, Bicycle Delay [s]	35.90	36.19	25.78	10.67
l_b,int, Bicycle LOS Score for Intersection	2.500	2.234	2.309	2.356
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	852.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.886

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	106	1	308	10	2	30	25	717	8	45	633	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	1	308	10	2	30	25	717	8	45	633	8
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	0	86	3	1	8	7	199	2	13	176	2
Total Analysis Volume [veh/h]	118	1	342	11	2	33	28	797	9	50	703	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

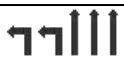
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.89	0.01	0.79	0.74	0.02	0.09	0.03	0.01	0.00	0.06	0.01	0.00
d_M, Delay for Movement [s/veh]	852.26	835.94	803.00	374.72	174.01	142.37	9.19	0.00	0.00	9.68	0.00	0.00
Movement LOS	F	F	F	F	F	F	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	40.43	40.43	40.43	3.66	3.66	3.66	0.10	0.00	0.00	0.19	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1010.72	1010.72	1010.72	91.62	91.62	91.62	2.44	0.00	0.00	4.87	0.00	0.00
d_A, Approach Delay [s/veh]	815.68			199.30			0.31			0.64		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	183.52											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	101.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.919

Intersection Setup

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3534	95	333	1133	83	1316
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3534	95	333	1133	83	1316
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	902	24	85	289	21	336
Total Analysis Volume [veh/h]	3606	97	340	1156	85	1343
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	200
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	198.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	175	50	50	50	50	50
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	124	154	30	154	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	0	4	4
Pedestrian Clearance [s]	35	5	0	5	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	294	294	294	294	294	294
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	178	178	49	231	53	106
g / C, Green / Cycle	0.61	0.61	0.17	0.79	0.18	0.36
(v / s)_i Volume / Saturation Flow Rate	0.71	0.06	0.10	0.23	0.02	0.32
s, saturation flow rate [veh/h]	5094	1578	3459	5094	3459	4220
c, Capacity [veh/h]	3086	956	581	4003	624	1477
d1, Uniform Delay [s]	57.90	24.31	112.78	8.71	101.13	91.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	76.77	0.05	0.94	0.04	0.10	4.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.17	0.10	0.59	0.29	0.14	0.91
d, Delay for Lane Group [s/veh]	134.68	24.36	113.73	8.75	101.23	95.23
Lane Group LOS	F	C	F	A	F	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	95.38	2.92	12.12	6.72	2.79	33.37
50th-Percentile Queue Length [ft/ln]	2384.40	73.01	303.01	167.99	69.68	834.13
95th-Percentile Queue Length [veh/ln]	127.03	5.26	17.83	10.97	5.02	42.84
95th-Percentile Queue Length [ft/ln]	3175.79	131.42	445.75	274.27	125.43	1070.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	134.68	24.36	113.73	8.75	101.23	95.23
Movement LOS	F	C	F	A	F	F
d_A, Approach Delay [s/veh]	131.79		32.61		95.59	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	101.60					
Intersection LOS	F					
Intersection V/C	0.919					

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	139.00	0.00	138.03
l_p,int, Pedestrian LOS Score for Intersectio	3.912	0.000	3.046
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	1008	265
d_b, Bicycle Delay [s]	54.40	36.14	110.48
l_b,int, Bicycle LOS Score for Intersection	3.596	2.382	1.670
Bicycle LOS	D	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	125.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.920

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	81	41	1384	49	171	87	34	1868	248	419	853	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	41	1384	49	171	87	34	1868	248	419	853	6
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	11	360	13	44	23	9	486	65	109	222	2
Total Analysis Volume [veh/h]	84	43	1440	51	178	91	35	1944	258	436	888	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing m	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	6	15	43	4	13	13	68	40	40	68	60	60
g / C, Green / Cycle	0.06	0.15	0.42	0.04	0.13	0.13	0.66	0.39	0.39	0.66	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.34	0.03	0.11	0.06	0.03	0.63	0.27	0.28	0.17	0.00
s, saturation flow rate [veh/h]	1781	1593	4184	1781	1593	1484	1285	3097	966	1536	5094	1589
c, Capacity [veh/h]	110	233	1749	67	207	193	856	1209	377	1024	2994	934
d1, Uniform Delay [s]	47.34	38.38	26.32	48.86	43.67	41.15	6.31	31.25	25.98	18.09	10.55	8.75
k, delay calibration	0.11	0.11	0.25	0.11	0.11	0.12	0.11	0.11	0.20	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.21	0.38	2.29	15.63	9.85	2.03	0.02	274.30	4.09	0.28	0.05	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.18	0.82	0.76	0.86	0.47	0.04	1.61	0.68	0.43	0.30	0.01
d, Delay for Lane Group [s/veh]	57.55	38.76	28.61	64.49	53.52	43.18	6.33	305.55	30.07	18.37	10.61	8.75
Lane Group LOS	E	D	C	E	D	D	A	F	C	B	B	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.37	0.48	10.00	1.60	2.52	2.26	0.12	40.27	5.52	1.70	3.18	0.05
50th-Percentile Queue Length [ft/ln]	59.33	11.88	249.94	40.08	62.98	56.57	3.02	1006.79	137.92	42.55	79.54	1.35
95th-Percentile Queue Length [veh/ln]	4.27	0.86	15.18	2.89	4.53	4.07	0.22	64.71	9.37	3.06	5.73	0.10
95th-Percentile Queue Length [ft/ln]	106.80	21.38	379.58	72.14	113.37	101.82	5.44	1617.85	234.23	76.59	143.17	2.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.55	38.76	28.61	64.49	53.52	43.18	6.33	305.55	30.07	18.37	10.61	8.75
Movement LOS	E	D	C	E	D	D	A	F	C	B	B	A
d_A, Approach Delay [s/veh]	30.44			52.33			269.10			13.15		
Approach LOS	C			D			F			B		
d_I, Intersection Delay [s/veh]	125.39											
Intersection LOS	F											
Intersection V/C	0.920											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.62	0.00	42.62	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.373	0.000	3.162	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	734	603	2909	1777
d_b, Bicycle Delay [s]	20.53	25.02	10.58	0.64
l_b,int, Bicycle LOS Score for Intersection	2.852	1.824	2.790	2.291
Bicycle LOS	C	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	328.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.581

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	124	1368	21	330	743	55	62	9	66	69	16	454
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	1368	21	330	743	55	62	9	66	69	16	454
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	357	5	86	194	14	16	2	17	18	4	119
Total Analysis Volume [veh/h]	130	1429	22	345	776	57	65	9	69	72	17	474
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			86			11			85		
v_di, Inbound Pedestrian Volume crossing m	11			85			12			86		
v_co, Outbound Pedestrian Volume crossing	13			14			14			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			14			14			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			18			7			15		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	85	79	16	79	85	32	32	32	32	32	32
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	94	78	78	94	86	86	29	29
g / C, Green / Cycle	0.72	0.60	0.60	0.72	0.66	0.66	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.37	0.87	0.87	0.80	0.50	0.51	0.44	0.73
s, saturation flow rate [veh/h]	352	837	831	431	837	810	324	767
c, Capacity [veh/h]	294	502	499	160	553	536	112	190
d1, Uniform Delay [s]	15.74	25.99	25.99	47.89	15.00	15.14	54.72	50.74
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.78	212.73	214.69	539.20	9.53	10.17	176.10	894.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	1.45	1.45	2.15	0.76	0.77	1.28	2.96
d, Delay for Lane Group [s/veh]	20.52	238.73	240.69	587.09	24.53	25.31	230.82	945.65
Lane Group LOS	C	F	F	F	C	C	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	43.57	43.57	25.42	9.38	9.33	9.24	53.70
50th-Percentile Queue Length [ft/ln]	33.10	1089.27	1089.25	635.59	234.62	233.20	230.90	1342.61
95th-Percentile Queue Length [veh/ln]	2.38	69.12	69.21	45.76	14.41	14.34	15.83	87.40
95th-Percentile Queue Length [ft/ln]	59.58	1728.01	1730.19	1144.06	360.23	358.42	395.65	2185.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.52	239.69	240.69	587.09	24.89	25.31	230.82	230.82	230.82	945.65	945.65	945.65
Movement LOS	C	F	F	F	C	C	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	221.68			189.56			230.82			945.65		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	328.77											
Intersection LOS	F											
Intersection V/C	1.581											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.29	56.29	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	3.346	3.075	1.999	2.563
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1154	443	446
d_b, Bicycle Delay [s]	9.22	11.72	39.50	39.51
l_b,int, Bicycle LOS Score for Intersection	2.864	2.531	1.796	2.489
Bicycle LOS	C	B	A	B

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	55.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.096

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	101	1442	821	99	34	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	1442	821	99	34	79
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	373	212	26	9	20
Total Analysis Volume [veh/h]	104	1491	849	102	35	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing m	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	115	95	95	30	30
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	14	122	106	106	16	16
g / C, Green / Cycle	0.09	0.84	0.73	0.73	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.94	0.57	0.59	0.04	0.09
s, saturation flow rate [veh/h]	1265	1593	837	801	994	893
c, Capacity [veh/h]	118	1342	609	583	109	98
d1, Uniform Delay [s]	64.90	11.42	12.38	13.15	59.56	63.08
k, delay calibration	0.08	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.07	61.07	9.56	11.91	0.63	7.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	1.11	0.78	0.82	0.32	0.84
d, Delay for Lane Group [s/veh]	78.97	72.49	21.94	25.06	60.18	70.11
Lane Group LOS	E	F	C	C	E	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.22	24.21	10.00	10.84	1.21	3.16
50th-Percentile Queue Length [ft/ln]	105.47	605.36	250.01	270.88	30.37	78.96
95th-Percentile Queue Length [veh/ln]	7.59	35.37	15.19	16.23	2.19	5.69
95th-Percentile Queue Length [ft/ln]	189.68	884.24	379.66	405.84	54.67	142.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.97	72.49	23.31	25.06	60.18	70.11
Movement LOS	E	F	C	C	E	E
d_A, Approach Delay [s/veh]	72.91		23.50		67.14	
Approach LOS	E		C		E	
d_I, Intersection Delay [s/veh]	55.01					
Intersection LOS	E					
Intersection V/C	1.096					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.75	63.75	61.89
l_p,int, Pedestrian LOS Score for Intersectio	2.981	2.960	2.068
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1532	1256	373
d_b, Bicycle Delay [s]	3.97	10.06	48.03
l_b,int, Bicycle LOS Score for Intersection	2.875	2.344	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	257.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.652

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1468	360	28	893	444	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1468	360	28	893	444	17
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	372	91	7	226	113	4
Total Analysis Volume [veh/h]	1489	365	28	906	450	17
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	110	110	21	124	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	108	108	16	124	21	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	112	112	5	120	18	18
g / C, Green / Cycle	0.77	0.77	0.03	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.14	0.65	0.04	0.70	0.36	0.36
s, saturation flow rate [veh/h]	1302	561	647	1293	647	641
c, Capacity [veh/h]	1008	434	21	1070	79	79
d1, Uniform Delay [s]	16.38	10.06	70.13	7.20	63.60	63.60
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	220.00	17.51	168.24	8.29	912.25	912.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.48	0.84	1.32	0.85	2.95	2.95
d, Delay for Lane Group [s/veh]	236.38	27.58	238.36	15.49	975.85	976.15
Lane Group LOS	F	C	F	B	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	43.60	7.81	1.77	6.69	23.06	22.86
50th-Percentile Queue Length [ft/ln]	1090.10	195.16	44.31	167.28	576.40	571.53
95th-Percentile Queue Length [veh/ln]	71.08	12.39	3.19	10.93	38.57	38.28
95th-Percentile Queue Length [ft/ln]	1777.03	309.72	79.75	273.34	964.27	956.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	236.38	27.58	238.36	15.49	975.99	976.15
Movement LOS	F	C	F	B	F	F
d_A, Approach Delay [s/veh]	195.27		22.17		976.00	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	257.62					
Intersection LOS	F					
Intersection V/C	1.652					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	61.92
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.242
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1434	1655	246
d_b, Bicycle Delay [s]	5.81	2.16	55.85
l_b,int, Bicycle LOS Score for Intersection	3.089	2.330	2.330
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	219.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.163

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	332	1528	464	93	1141	17	44	178	308	292	159	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	332	1528	464	93	1141	17	44	178	308	292	159	68
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	406	123	25	303	5	12	47	82	78	42	18
Total Analysis Volume [veh/h]	353	1626	494	99	1214	18	47	189	328	311	169	72
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11			20			10			19		
v_di, Inbound Pedestrian Volume crossing m	10			19			11			20		
v_co, Outbound Pedestrian Volume crossing	3			7			7			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			7			7			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	140.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	4
Maximum Green [s]	21	40	40	21	40	40	5	25	25	5	21	5
Amber [s]	3.0	4.4	4.4	3.0	4.0	4.0	3.0	3.6	3.6	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0
Split [s]	31	51	51	14	34	34	14	34	34	51	31	51
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.4	3.4	1.0	3.0	3.0	2.0	2.6	2.6	2.0	1.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.40	5.40	3.00	5.00	5.00	4.00	4.60	4.60	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.40	3.40	1.00	3.00	3.00	2.00	2.60	2.60	2.00	1.00	1.00
g_i, Effective Green Time [s]	28	52	52	11	35	35	8	28	28	43	23	23
g / C, Green / Cycle	0.22	0.40	0.40	0.08	0.27	0.27	0.06	0.22	0.22	0.33	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.28	0.56	0.59	0.11	0.43	0.43	0.04	0.19	0.22	0.09	0.13	0.05
s, saturation flow rate [veh/h]	1265	2530	1178	937	1874	974	1139	984	1519	3357	1329	1456
c, Capacity [veh/h]	272	1007	469	79	507	264	55	214	331	1101	234	257
d1, Uniform Delay [s]	51.00	39.12	39.12	59.48	47.40	47.40	64.99	49.23	50.11	32.34	50.52	46.19
k, delay calibration	0.50	0.50	0.50	0.15	0.50	0.50	0.11	0.20	0.28	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	157.70	190.21	233.33	138.84	277.45	287.37	27.91	18.58	34.83	0.14	4.06	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.30	1.41	1.49	1.25	1.60	1.60	0.85	0.88	0.99	0.28	0.72	0.28
d, Delay for Lane Group [s/veh]	208.71	229.33	272.45	198.32	324.85	334.77	92.90	67.80	84.95	32.48	54.58	46.41
Lane Group LOS	F	F	F	F	F	F	F	E	F	C	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.61	42.02	44.73	5.70	27.80	29.63	2.02	7.03	13.67	3.68	5.46	2.04
50th-Percentile Queue Length [ft/ln]	515.14	1050.41	1118.34	142.58	694.89	740.68	50.47	175.84	341.84	92.11	136.61	51.03
95th-Percentile Queue Length [veh/ln]	31.80	64.35	69.69	10.27	44.93	47.64	3.63	11.38	19.74	6.63	9.30	3.67
95th-Percentile Queue Length [ft/ln]	794.97	1608.83	1742.35	256.65	1123.33	1190.98	90.85	284.58	493.45	165.79	232.45	91.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	208.71	234.81	272.45	198.32	328.15	334.77	92.90	67.80	84.95	32.48	54.58	46.41
Movement LOS	F	F	F	F	F	F	F	E	F	C	D	D
d_A, Approach Delay [s/veh]	238.60			318.58			79.86			41.06		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	219.88											
Intersection LOS	F											
Intersection V/C	1.163											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.416	3.037	2.418	2.689
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	702	446	452	431
d_b, Bicycle Delay [s]	27.39	39.33	39.00	40.13
l_b,int, Bicycle LOS Score for Intersection	2.920	2.292	2.490	2.470
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	58	1567	1057	274	404	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	1567	1057	274	404	54
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	420	284	73	108	14
Total Analysis Volume [veh/h]	62	1681	1134	294	433	58
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	13	100	87	87	40	40
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	31	31	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	3	35	29	29	17	17
g / C, Green / Cycle	0.04	0.57	0.47	0.47	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.03	0.47	0.32	0.19	0.24	0.04
s, saturation flow rate [veh/h]	1781	3560	3560	1550	1781	1567
c, Capacity [veh/h]	80	2019	1657	721	491	432
d1, Uniform Delay [s]	29.12	10.94	12.92	10.80	21.36	16.78
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	1.34	0.72	0.53	2.12	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.83	0.68	0.41	0.88	0.13
d, Delay for Lane Group [s/veh]	35.07	12.29	13.64	11.33	23.48	16.83
Lane Group LOS	D	B	B	B	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	7.55	5.17	2.27	5.72	0.58
50th-Percentile Queue Length [ft/ln]	24.87	188.82	129.23	56.87	143.08	14.45
95th-Percentile Queue Length [veh/ln]	1.79	12.06	8.90	4.09	9.65	1.04
95th-Percentile Queue Length [ft/ln]	44.77	301.49	222.44	102.37	241.17	26.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.07	12.29	13.64	11.33	23.48	16.83
Movement LOS	D	B	B	B	C	B
d_A, Approach Delay [s/veh]	13.10		13.17		22.69	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	14.41					
Intersection LOS	B					
Intersection V/C	0.871					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	20.73
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.194
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3074	2651	1164
d_b, Bicycle Delay [s]	8.91	3.27	5.37
l_b,int, Bicycle LOS Score for Intersection	2.998	2.738	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.598

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	1278	9	46	845	14	37	2	7	31	1	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1278	9	46	845	14	37	2	7	31	1	44
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	341	2	12	225	4	10	1	2	8	0	12
Total Analysis Volume [veh/h]	4	1362	10	49	901	15	39	2	7	33	1	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	0	39	39	2	41	4	4	4	5	5
g / C, Green / Cycle	0.00	0.57	0.57	0.04	0.60	0.06	0.06	0.06	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.00	0.37	0.37	0.03	0.49	0.01	0.01	0.00	0.02	0.03
s, saturation flow rate [veh/h]	1781	1870	1864	1781	1864	1781	1789	1430	1781	1510
c, Capacity [veh/h]	8	1065	1061	63	1119	105	106	85	133	113
d1, Uniform Delay [s]	34.28	10.11	10.12	33.00	10.82	30.89	30.89	30.67	30.08	30.49
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	45.10	1.41	1.42	17.80	3.22	0.89	0.88	0.41	0.95	2.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.64	0.65	0.77	0.82	0.19	0.19	0.08	0.25	0.42
d, Delay for Lane Group [s/veh]	79.38	11.52	11.53	50.80	14.04	31.78	31.77	31.08	31.03	33.00
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	6.48	6.47	1.11	9.98	0.36	0.36	0.12	0.54	0.82
50th-Percentile Queue Length [ft/ln]	4.06	161.88	161.69	27.73	249.59	8.95	8.95	3.06	13.53	20.61
95th-Percentile Queue Length [veh/ln]	0.29	10.65	10.64	2.00	15.17	0.64	0.64	0.22	0.97	1.48
95th-Percentile Queue Length [ft/ln]	7.30	266.21	265.96	49.91	379.14	16.11	16.12	5.50	24.35	37.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	79.38	11.53	11.53	50.80	14.04	14.04	31.77	31.77	31.08	31.03	33.00	33.00
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.72			15.91			31.67			32.20		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.42											
Intersection LOS	B											
Intersection V/C	0.598											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.31	24.31	24.31	24.31
l_p,int, Pedestrian LOS Score for Intersectio	2.587	2.765	2.122	1.964
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	581	871	871
d_b, Bicycle Delay [s]	17.37	17.42	10.97	10.97
l_b,int, Bicycle LOS Score for Intersection	2.695	3.152	1.639	1.693
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.895

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	18	1235	5	9	764	103	149	7	32	9	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	1235	5	9	764	103	149	7	32	9	8	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	325	1	2	201	27	39	2	8	2	2	2
Total Analysis Volume [veh/h]	19	1300	5	9	804	108	157	7	34	9	8	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing m	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	90	90	90	90	90	90	30	30	30	0	30	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	92	92	92	92	20	20
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.70	0.02	0.50	0.14	0.01
s, saturation flow rate [veh/h]	612	1868	422	1823	1376	1652
c, Capacity [veh/h]	370	1427	142	1393	285	318
d1, Uniform Delay [s]	15.08	11.08	39.67	6.69	48.03	42.07
k, delay calibration	0.50	0.50	0.50	0.50	0.20	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	10.58	0.85	2.41	5.52	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.91	0.06	0.65	0.70	0.08
d, Delay for Lane Group [s/veh]	15.35	21.66	40.53	9.10	53.55	42.17
Lane Group LOS	B	C	D	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.30	26.73	0.25	10.02	6.16	0.62
50th-Percentile Queue Length [ft/ln]	7.43	668.16	6.34	250.53	154.10	15.47
95th-Percentile Queue Length [veh/ln]	0.54	35.20	0.46	15.21	10.24	1.11
95th-Percentile Queue Length [ft/ln]	13.38	880.11	11.41	380.32	255.89	27.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.35	21.66	21.66	40.53	9.10	9.10	53.55	53.55	53.55	42.17	42.17	42.17
Movement LOS	B	C	C	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	21.57			9.41			53.55			42.17		
Approach LOS	C			A			D			D		
d_I, Intersection Delay [s/veh]	19.80											
Intersection LOS	B											
Intersection V/C	0.895											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.45	49.45	49.45	49.45
l_p,int, Pedestrian LOS Score for Intersectio	2.555	2.952	1.918	1.760
Crosswalk LOS	B	C	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1433	432	432
d_b, Bicycle Delay [s]	4.84	4.83	36.92	36.92
l_b,int, Bicycle LOS Score for Intersection	3.744	3.079	1.886	1.599
Bicycle LOS	D	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	1116	71	33	762	7	27	50	3	87	42	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	1116	71	33	762	7	27	50	3	87	42	116
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	295	19	9	202	2	7	13	1	23	11	31
Total Analysis Volume [veh/h]	3	1181	75	35	806	7	29	53	3	92	44	123
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing m	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	69
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	23	23	23	23	23	47	47	47	0	47	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	47	47	47	47	14	14	14	14
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.00	0.68	0.08	0.44	0.02	0.03	0.07	0.10
s, saturation flow rate [veh/h]	671	1846	442	1867	1214	1848	1342	1622
c, Capacity [veh/h]	388	1261	111	1275	191	367	291	322
d1, Uniform Delay [s]	11.54	10.87	34.42	6.15	30.50	22.88	27.46	24.73
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	24.50	7.30	2.45	0.36	0.19	0.62	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	1.00	0.32	0.64	0.15	0.15	0.32	0.52
d, Delay for Lane Group [s/veh]	11.57	35.37	41.72	8.60	30.87	23.07	28.07	26.02
Lane Group LOS	B	D	D	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	22.08	0.80	5.82	0.47	0.75	1.42	2.48
50th-Percentile Queue Length [ft/ln]	0.73	551.96	20.08	145.39	11.73	18.82	35.40	62.00
95th-Percentile Queue Length [veh/ln]	0.05	29.78	1.45	9.77	0.84	1.36	2.55	4.46
95th-Percentile Queue Length [ft/ln]	1.32	744.61	36.14	244.26	21.11	33.88	63.73	111.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.57	35.37	35.37	41.72	8.60	8.60	30.87	23.07	23.07	28.07	26.02	26.02
Movement LOS	B	D	D	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	35.31			9.97			25.73			26.75		
Approach LOS	D			A			C			C		
d_I, Intersection Delay [s/veh]	25.31											
Intersection LOS	C											
Intersection V/C	0.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.39	24.39	24.39	24.39
l_p,int, Pedestrian LOS Score for Intersectio	2.641	2.601	1.968	2.090
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	548	548	1243	1243
d_b, Bicycle Delay [s]	18.34	18.31	4.96	4.96
l_b,int, Bicycle LOS Score for Intersection	3.637	2.959	1.700	1.987
Bicycle LOS	D	C	A	A

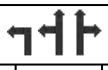
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	62.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	15	283	153	339	139	391	81	340	303	617	413	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	15	283	153	339	139	391	81	340	303	617	413	8
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	74	40	88	36	102	21	89	79	161	108	2
Total Analysis Volume [veh/h]	16	295	160	354	145	408	85	355	316	644	431	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			6			12			6		
v_di, Inbound Pedestrian Volume crossing m	12			6			12			6		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	50			19			4			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	40	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	40	0	34	34	34	0	38	0	29	29	29
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	43	43	43	22	22	22	22	31	31	31
g / C, Green / Cycle	0.18	0.18	0.18	0.30	0.30	0.30	0.16	0.16	0.16	0.16	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.11	0.14	0.14	0.26	0.05	0.13	0.13	0.13	0.20	0.20	0.20
s, saturation flow rate [veh/h]	1781	1870	1420	1781	1831	1548	1781	1870	1694	1543	1781	1797	1860
c, Capacity [veh/h]	329	345	262	541	557	471	284	298	270	246	393	397	410
d1, Uniform Delay [s]	47.00	55.31	51.80	39.45	39.32	45.67	52.00	56.86	57.03	56.92	53.14	53.14	53.15
k, delay calibration	0.11	0.13	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.31	0.31	0.31
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	6.95	2.29	2.79	2.62	18.92	0.58	5.24	6.33	7.54	18.53	18.39	18.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.85	0.61	0.46	0.45	0.87	0.30	0.81	0.83	0.84	0.90	0.90	0.90
d, Delay for Lane Group [s/veh]	47.06	62.25	54.08	42.25	41.94	64.59	52.59	62.09	63.36	64.46	71.67	71.53	71.24
Lane Group LOS	D	E	D	D	D	E	D	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.47	10.77	5.30	7.47	7.49	15.87	2.71	8.70	8.14	7.60	14.16	14.28	14.76
50th-Percentile Queue Length [ft/ln]	11.78	269.29	132.49	186.84	187.15	396.87	67.74	217.5	203.4	190.0	354.12	356.93	368.96
95th-Percentile Queue Length [veh/ln]	0.85	16.15	9.07	11.96	11.97	22.41	4.88	13.54	12.82	12.13	20.34	20.47	21.06
95th-Percentile Queue Length [ft/ln]	21.21	403.85	226.87	298.93	299.33	560.23	121.9	338.4	320.3	303.1	508.43	511.85	526.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.06	62.25	54.08	42.15	41.94	64.59	52.59	62.50	64.12	71.61	71.28	71.24
Movement LOS	D	E	D	D	D	E	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	58.96			52.21			62.05			71.47		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	62.00											
Intersection LOS	E											
Intersection V/C	0.800											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.55	58.55	58.55	58.55
l_p,int, Pedestrian LOS Score for Intersectio	2.324	2.834	4.335	2.683
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	510	418	475	347
d_b, Bicycle Delay [s]	39.88	44.22	40.78	48.18
l_b,int, Bicycle LOS Score for Intersection	2.337	3.056	3.008	2.453
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	77.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	89	629	64	22	641	65	191	120	57	73	121	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	629	64	22	641	65	191	120	57	73	121	25
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	173	18	6	176	18	52	33	16	20	33	7
Total Analysis Volume [veh/h]	98	691	70	24	704	71	210	132	63	80	133	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			20			20			17		
v_di, Inbound Pedestrian Volume crossing m	17			20			20			18		
v_co, Outbound Pedestrian Volume crossing	33			29			34			29		
v_ci, Inbound Pedestrian Volume crossing mi	34			29			33			29		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			5			20			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	30	60	60	30	30	30	35	35	35	35	35	35
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	84	84	10	81	81	40	46	40	46	40	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	4.10	4.10	4.00	4.00	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.10	0.00	2.00	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	85	78	85	73	46	46	36	36
g / C, Green / Cycle	0.47	0.43	0.47	0.41	0.26	0.26	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.12	0.42	0.03	0.43	0.12	0.12	0.04	0.09
s, saturation flow rate [veh/h]	829	1819	774	1820	1781	1685	1781	1770
c, Capacity [veh/h]	174	787	137	738	459	435	355	353
d1, Uniform Delay [s]	42.09	49.81	41.34	53.51	56.18	56.05	60.39	63.41
k, delay calibration	0.11	0.42	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.85	22.41	0.60	47.09	3.26	3.33	1.47	4.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.97	0.18	1.05	0.46	0.45	0.23	0.45
d, Delay for Lane Group [s/veh]	44.94	72.23	41.94	100.60	59.44	59.37	61.86	67.57
Lane Group LOS	D	E	D	F	E	E	E	E
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.58	38.24	0.60	42.95	8.56	7.95	3.27	6.98
50th-Percentile Queue Length [ft/ln]	64.54	955.88	14.90	1073.77	214.07	198.71	81.87	174.52
95th-Percentile Queue Length [veh/ln]	4.65	48.38	1.07	55.76	13.36	12.57	5.89	11.31
95th-Percentile Queue Length [ft/ln]	116.16	1209.40	26.83	1393.96	334.05	314.31	147.37	282.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.94	72.23	72.23	41.94	100.60	100.60	59.44	59.37	59.37	61.86	67.57	67.57
Movement LOS	D	E	E	D	F	F	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	69.11			98.84			59.41			65.66		
Approach LOS	E			F			E			E		
d_I, Intersection Delay [s/veh]	77.36											
Intersection LOS	E											
Intersection V/C	0.682											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	79.34	79.34	79.34	79.34
l_p,int, Pedestrian LOS Score for Intersectio	2.558	2.504	2.193	2.177
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	881	848	460	393
d_b, Bicycle Delay [s]	28.18	29.95	53.90	58.28
l_b,int, Bicycle LOS Score for Intersection	2.977	2.878	2.228	1.956
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	337	90	25	248	33	94	183	15	20	152	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	337	90	25	248	33	94	183	15	20	152	26
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	94	25	7	69	9	26	51	4	6	42	7
Total Analysis Volume [veh/h]	23	376	100	28	277	37	105	204	17	22	170	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			2			9			3		
v_di, Inbound Pedestrian Volume crossing m	9			3			9			2		
v_co, Outbound Pedestrian Volume crossing	7			1			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			12			20			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	50	50	50	50
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	18	18	11	9
g / C, Green / Cycle	0.35	0.35	0.23	0.18
(v / s)_i Volume / Saturation Flow Rate	0.28	0.19	0.18	0.12
s, saturation flow rate [veh/h]	1753	1787	1824	1819
c, Capacity [veh/h]	690	705	414	321
d1, Uniform Delay [s]	14.80	13.09	18.40	19.52
k, delay calibration	0.11	0.11	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.45	0.52	3.36	1.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.49	0.79	0.69
d, Delay for Lane Group [s/veh]	16.25	13.61	21.76	21.48
Lane Group LOS	B	B	C	C
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	4.73	2.80	3.63	2.35
50th-Percentile Queue Length [ft/ln]	118.31	70.11	90.67	58.73
95th-Percentile Queue Length [veh/ln]	8.30	5.05	6.53	4.23
95th-Percentile Queue Length [ft/ln]	207.50	126.21	163.20	105.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.25	16.25	16.25	13.61	13.61	13.61	21.76	21.76	21.76	21.48	21.48	21.48
Movement LOS	B	B	B	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.25			13.61			21.76			21.48		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.73											
Intersection LOS	B											
Intersection V/C	0.635											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	15.39	16.99	15.39	15.39
l_p,int, Pedestrian LOS Score for Intersectio	2.051	1.993	1.975	1.951
Crosswalk LOS	B	A	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1191	1191	1191	1191
d_b, Bicycle Delay [s]	4.15	4.15	4.16	4.13
l_b,int, Bicycle LOS Score for Intersection	2.383	2.124	2.098	1.924
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.806

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	16	13	33	115	3	305	29	1536	112	157	1128	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.40	0.00	1.50	1.20	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	13	33	115	3	305	29	1536	112	157	1128	12
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	9	30	1	80	8	403	29	41	296	3
Total Analysis Volume [veh/h]	17	14	35	121	3	320	30	1610	117	165	1182	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			14			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	30	0	0	30	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	27	0	0	27	0	15	58	0	25	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	21	6	61	61	12	67	67
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.05	0.55	0.55	0.11	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.20	0.02	6.02	0.20	0.02	0.45	0.07	0.09	0.22	0.22
s, saturation flow rate [veh/h]	156	1590	21	1574	1810	3578	1568	1788	3583	1870
c, Capacity [veh/h]	80	304	69	301	99	1981	868	196	2181	1138
d1, Uniform Delay [s]	38.27	36.77	54.72	44.31	49.00	10.66	6.73	46.03	4.66	4.66
k, delay calibration	0.22	0.11	0.50	0.23	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.08	0.17	414.69	53.32	1.70	3.78	0.32	9.36	0.46	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.12	1.81	1.06	0.30	0.81	0.13	0.84	0.36	0.36
d, Delay for Lane Group [s/veh]	44.35	36.93	469.42	97.63	50.70	14.44	7.05	55.39	5.13	5.55
Lane Group LOS	D	D	F	F	D	B	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.85	0.82	9.80	12.55	0.82	9.37	0.85	4.73	2.05	2.28
50th-Percentile Queue Length [ft/ln]	21.13	20.48	245.06	313.81	20.61	234.36	21.18	118.29	51.36	57.01
95th-Percentile Queue Length [veh/ln]	1.52	1.47	17.64	18.95	1.48	14.40	1.53	8.30	3.70	4.10
95th-Percentile Queue Length [ft/ln]	38.03	36.87	441.10	473.66	37.10	359.89	38.13	207.48	92.46	102.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.35	44.35	36.93	469.42	469.42	97.63	50.70	14.44	7.05	55.39	5.27	5.55
Movement LOS	D	D	D	F	F	F	D	B	A	E	A	A
d_A, Approach Delay [s/veh]	40.42			201.47			14.57			11.35		
Approach LOS	D			F			B			B		
d_I, Intersection Delay [s/veh]	36.71											
Intersection LOS	D											
Intersection V/C	6.806											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.968	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	382	382	927	1109
d_b, Bicycle Delay [s]	36.05	36.05	15.93	10.93
l_b,int, Bicycle LOS Score for Intersection	1.669	2.292	3.009	2.308
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	35.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	294	153	103	51	234	51	122	1400	53	60	923	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	294	153	103	51	234	51	122	1400	53	60	923	153
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	40	27	13	62	13	32	369	14	16	243	40
Total Analysis Volume [veh/h]	310	161	109	54	247	54	129	1475	56	63	973	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			1			9			2		
v_di, Inbound Pedestrian Volume crossing m	9			2			8			1		
v_co, Outbound Pedestrian Volume crossing	1			5			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			5			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			5			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	35	0	0	35	0	20	70	0	20	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	29	29	29	26	26	26	14	82	82	8	76	76
g / C, Green / Cycle	0.18	0.18	0.18	0.16	0.16	0.16	0.08	0.51	0.51	0.05	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.07	0.03	0.13	0.03	0.07	0.41	0.04	0.04	0.27	0.10
s, saturation flow rate [veh/h]	1781	1840	1515	1781	1870	1551	1781	3560	1539	1781	3560	1543
c, Capacity [veh/h]	319	330	272	294	309	256	151	1825	789	85	1695	735
d1, Uniform Delay [s]	62.05	62.03	57.94	57.57	64.32	57.78	70.06	19.80	12.67	74.00	19.92	16.58
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.15	3.04	0.96	0.30	4.75	0.40	12.48	3.98	0.17	11.60	1.42	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.73	0.40	0.18	0.80	0.21	0.85	0.81	0.07	0.74	0.57	0.22
d, Delay for Lane Group [s/veh]	65.19	65.07	58.90	57.86	69.07	58.19	82.54	23.78	12.84	85.60	21.34	17.26
Lane Group LOS	E	E	E	E	E	E	F	C	B	F	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.24	9.52	4.01	1.94	10.22	1.96	5.58	17.29	0.73	2.81	9.78	2.60
50th-Percentile Queue Length [ft/ln]	230.97	238.05	100.17	48.62	255.57	48.92	139.54	432.20	18.17	70.24	244.55	64.91
95th-Percentile Queue Length [veh/ln]	14.22	14.58	7.21	3.50	15.47	3.52	9.46	24.11	1.31	5.06	14.91	4.67
95th-Percentile Queue Length [ft/ln]	355.58	364.57	180.30	87.52	386.66	88.05	236.41	602.67	32.70	126.44	372.78	116.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.16	65.07	58.90	57.86	69.07	58.19	82.54	23.78	12.84	85.60	21.34	17.26
Movement LOS	E	E	E	E	E	E	F	C	B	F	C	B
d_A, Approach Delay [s/veh]	63.96			65.71			27.98			24.17		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	35.81											
Intersection LOS	D											
Intersection V/C	0.730											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	72.26	72.26	72.26
l_p,int, Pedestrian LOS Score for Intersectio	2.432	2.289	3.012	2.975
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	356	784	779
d_b, Bicycle Delay [s]	54.26	54.23	29.64	29.96
l_b,int, Bicycle LOS Score for Intersection	2.517	2.145	2.929	2.547
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	121	257	107	127	203	83	74	1332	99	89	965	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	257	107	127	203	83	74	1332	99	89	965	50
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	66	28	33	52	21	19	343	25	23	248	13
Total Analysis Volume [veh/h]	124	264	110	131	209	85	76	1370	102	92	993	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	6			0			0			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			0			0			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	10			10			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	20	40	0	20	40	0	21	83	0	18	79	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	28	28	14	26	26	9	91	91	10	93	93
g / C, Green / Cycle	0.10	0.17	0.17	0.09	0.16	0.16	0.05	0.57	0.57	0.06	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.07	0.14	0.07	0.07	0.11	0.05	0.04	0.38	0.07	0.05	0.28	0.03
s, saturation flow rate [veh/h]	1781	1870	1550	1781	1870	1548	1781	3560	1554	1781	3560	1537
c, Capacity [veh/h]	178	325	270	152	298	247	95	2029	885	112	2064	891
d1, Uniform Delay [s]	69.71	63.61	58.69	72.26	63.66	59.74	72.09	1.94	1.74	72.43	9.48	7.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	4.87	0.99	12.94	2.98	0.82	14.06	1.82	0.26	13.44	0.81	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.81	0.41	0.86	0.70	0.34	0.80	0.68	0.12	0.82	0.48	0.06
d, Delay for Lane Group [s/veh]	74.56	68.48	59.68	85.20	66.63	60.56	86.16	3.76	2.00	85.87	10.29	7.91
Lane Group LOS	E	E	E	F	E	E	F	A	A	F	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	10.92	4.10	5.92	8.41	3.17	3.36	1.85	0.26	4.09	5.21	0.47
50th-Percentile Queue Length [ft/ln]	130.50	272.90	102.54	148.01	210.34	79.33	84.08	46.25	6.42	102.33	130.28	11.81
95th-Percentile Queue Length [veh/ln]	8.97	16.33	7.38	9.91	13.17	5.71	6.05	3.33	0.46	7.37	8.96	0.85
95th-Percentile Queue Length [ft/ln]	224.17	408.36	184.57	247.78	329.27	142.80	151.34	83.26	11.55	184.20	223.88	21.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.56	68.48	59.68	85.20	66.63	60.56	86.16	3.76	2.00	85.87	10.29	7.91
Movement LOS	E	E	E	F	E	E	F	A	A	F	B	A
d_A, Approach Delay [s/veh]	68.05			71.14			7.69			16.30		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	26.21											
Intersection LOS	C											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.23	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.329	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	942	892
d_b, Bicycle Delay [s]	51.17	51.17	22.44	24.63
l_b,int, Bicycle LOS Score for Intersection	2.381	2.261	2.837	2.497
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	7.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	56	21	77	47	30	50	0	1462	42	0	1073	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	21	77	47	30	50	0	1462	42	0	1073	83
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9500	0.9560	0.9560	0.9500	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	5	20	12	8	13	0	382	11	0	281	22
Total Analysis Volume [veh/h]	59	22	81	49	31	52	0	1529	44	0	1122	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			14			13			0		
v_di, Inbound Pedestrian Volume crossing m	0			13			14			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			12			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	35	0	0	30	0	0	95	0	0	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	13	13	13	13	13	120	120	120	120
g / C, Green / Cycle	0.08	0.08	0.08	0.08	0.08	0.75	0.75	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.05	0.03	0.05	0.43	0.03	0.32	0.05
s, saturation flow rate [veh/h]	1781	1870	1511	1781	1634	3560	1527	3560	1589
c, Capacity [veh/h]	148	156	126	148	136	2674	1147	2674	1194
d1, Uniform Delay [s]	69.55	68.05	70.86	69.18	70.88	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.72	0.41	5.39	1.29	4.39	0.89	0.06	0.49	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.14	0.64	0.33	0.61	0.57	0.04	0.42	0.07
d, Delay for Lane Group [s/veh]	71.27	68.46	76.25	70.47	75.27	0.89	0.06	0.49	0.12
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.38	0.86	3.42	1.97	3.50	0.33	0.02	0.18	0.04
50th-Percentile Queue Length [ft/ln]	59.56	21.53	85.54	49.34	87.45	8.31	0.50	4.51	0.98
95th-Percentile Queue Length [veh/ln]	4.29	1.55	6.16	3.55	6.30	0.60	0.04	0.32	0.07
95th-Percentile Queue Length [ft/ln]	107.21	38.75	153.98	88.81	157.42	14.95	0.90	8.12	1.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.27	68.46	76.25	70.47	75.27	75.27	0.00	0.89	0.06	0.00	0.49	0.12
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	73.38			73.49			0.87			0.46		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.64											
Intersection LOS	A											
Intersection V/C	0.548											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.21	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.023	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	280	1092	1092
d_b, Bicycle Delay [s]	54.85	59.54	16.51	16.48
l_b,int, Bicycle LOS Score for Intersection	1.827	1.777	2.857	2.557
Bicycle LOS	A	A	C	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	48	299	118	494	259	87	176	1349	593	171	1001	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	299	118	494	259	87	176	1349	593	171	1001	45
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	79	31	130	68	23	46	355	156	45	263	12
Total Analysis Volume [veh/h]	50	314	124	519	272	91	185	1419	624	180	1053	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			18			0			19		
v_di, Inbound Pedestrian Volume crossing m	0			19			0			18		
v_co, Outbound Pedestrian Volume crossing	16			6			6			15		
v_ci, Inbound Pedestrian Volume crossing mi	15			6			6			16		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	13			14			5			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.2	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.20	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.20	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	66	66	19	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.44	0.44	0.12	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.15	0.15	0.06	0.10	0.40	0.40	0.10	0.30	0.03
s, saturation flow rate [veh/h]	1852	1682	3459	1870	1458	1781	3560	1554	1781	3560	1535
c, Capacity [veh/h]	292	265	669	362	282	200	1557	679	222	1596	688
d1, Uniform Delay [s]	61.60	61.96	57.44	57.13	51.78	63.20	28.71	28.36	57.81	13.29	10.63
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	4.16	0.74	1.20	0.24	7.40	9.60	19.52	2.73	2.16	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.89	0.78	0.75	0.32	0.93	0.91	0.92	0.81	0.66	0.07
d, Delay for Lane Group [s/veh]	64.52	66.12	58.18	58.33	52.03	70.60	38.31	47.88	60.54	15.44	10.82
Lane Group LOS	E	E	E	E	D	E	D	D	E	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.60	9.18	9.45	9.90	2.99	7.13	22.13	21.02	6.20	6.06	0.47
50th-Percentile Queue Length [ft/ln]	240.04	229.51	236.31	247.57	74.64	178.31	553.13	525.54	154.96	151.52	11.80
95th-Percentile Queue Length [veh/ln]	14.68	14.15	14.49	15.06	5.37	11.51	29.84	28.54	10.28	10.10	0.85
95th-Percentile Queue Length [ft/ln]	367.09	353.73	362.36	376.59	134.36	287.81	745.98	713.52	257.03	252.46	21.23

Movement, Approach, & Intersection Results

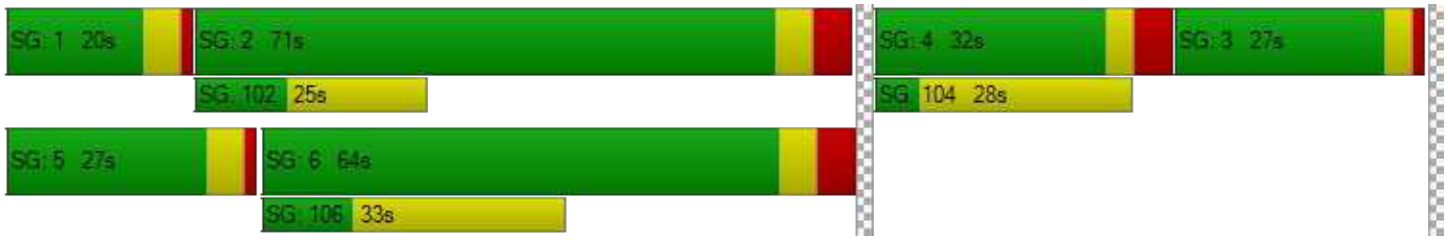
d_M, Delay for Movement [s/veh]	64.52	65.10	66.12	58.18	58.33	52.03	70.60	38.31	47.88	60.54	15.44	10.82
Movement LOS	E	E	E	E	E	D	E	D	D	E	B	B
d_A, Approach Delay [s/veh]	65.30			57.59			43.67			21.62		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	42.57											
Intersection LOS	D											
Intersection V/C	0.815											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.67	61.67	0.00	66.29
l_p,int, Pedestrian LOS Score for Intersectio	2.285	2.800	0.000	3.017
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	838
d_b, Bicycle Delay [s]	54.13	52.47	29.61	25.30
l_b,int, Bicycle LOS Score for Intersection	1.962	3.015	3.398	2.616
Bicycle LOS	A	C	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	57	10	36	40	15	94	51	1793	10	103	1468	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	10	36	40	15	94	51	1793	10	103	1468	38
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	3	9	10	4	25	13	470	3	27	385	10
Total Analysis Volume [veh/h]	60	10	38	42	16	99	54	1881	10	108	1540	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			4			5		
v_di, Inbound Pedestrian Volume crossing m	5			4			4			6		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			16			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	36	36	36	36	36	36	29	95	95	29	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	24	9	114	114	12	117	117
g / C, Green / Cycle	0.15	0.15	0.15	0.06	0.72	0.72	0.07	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.11	0.05	0.06	0.03	0.35	0.35	0.06	0.29	0.29
s, saturation flow rate [veh/h]	1001	1247	1533	1781	3560	1864	1781	3560	1841
c, Capacity [veh/h]	184	225	229	101	2546	1333	129	2602	1346
d1, Uniform Delay [s]	68.09	60.52	61.76	71.87	1.17	1.17	71.33	0.58	0.58
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.94	0.60	1.29	4.28	0.67	1.28	13.02	0.46	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.26	0.43	0.53	0.49	0.49	0.84	0.40	0.40
d, Delay for Lane Group [s/veh]	71.03	61.12	63.06	76.15	1.84	2.45	84.35	1.04	1.47
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.49	2.20	3.84	2.24	1.25	1.54	4.73	0.61	0.79
50th-Percentile Queue Length [ft/ln]	112.20	55.04	96.06	55.92	31.30	38.43	118.19	15.25	19.84
95th-Percentile Queue Length [veh/ln]	7.96	3.96	6.92	4.03	2.25	2.77	8.29	1.10	1.43
95th-Percentile Queue Length [ft/ln]	199.06	99.07	172.92	100.65	56.35	69.18	207.34	27.45	35.72

Movement, Approach, & Intersection Results

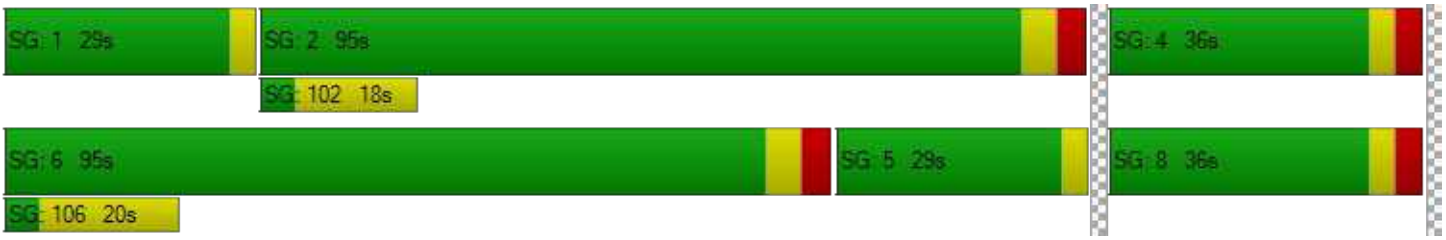
d_M, Delay for Movement [s/veh]	71.03	71.03	71.03	61.12	61.12	63.06	76.15	2.05	2.45	84.35	1.18	1.47
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	71.03			62.34			4.11			6.51		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	9.35											
Intersection LOS	A											
Intersection V/C	0.552											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.832	2.015	0.000	0.000
Crosswalk LOS	A	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	1099	1099
d_b, Bicycle Delay [s]	53.05	53.24	16.29	16.25
l_b,int, Bicycle LOS Score for Intersection	1.738	1.819	2.629	2.488
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	238	0	183	0	1	3	270	1741	1	2	1360	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	238	0	183	0	1	3	270	1741	1	2	1360	125
Peak Hour Factor	0.9520	0.9900	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	0	48	0	0	1	71	457	0	1	357	33
Total Analysis Volume [veh/h]	250	0	192	0	1	3	284	1829	1	2	1429	131
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			7			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	5	0	0	10	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	41	41	0	0	41	0	55	85	0	34	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	35	35	35	35	28	114	114	0	87	87
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.17	0.71	0.71	0.00	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.18	0.12	0.00	0.00	0.16	0.34	0.34	0.00	0.29	0.29
s, saturation flow rate [veh/h]	1412	1592	1191	1651	1781	3560	1869	1781	3560	1779
c, Capacity [veh/h]	333	350	162	363	307	2545	1336	4	1939	969
d1, Uniform Delay [s]	61.61	55.40	0.00	48.83	60.57	1.18	1.18	79.64	12.83	12.86
k, delay calibration	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	1.34	0.00	0.01	11.53	0.63	1.20	61.56	1.06	2.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.55	0.00	0.01	0.92	0.47	0.47	0.46	0.54	0.54
d, Delay for Lane Group [s/veh]	66.35	56.74	0.00	48.85	72.11	1.81	2.38	141.20	13.90	15.01
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.30	7.07	0.00	0.13	11.94	1.26	1.53	0.16	7.12	7.49
50th-Percentile Queue Length [ft/ln]	257.57	176.69	0.00	3.22	298.52	31.48	38.32	3.91	178.05	187.13
95th-Percentile Queue Length [veh/ln]	15.57	11.43	0.00	0.23	17.61	2.27	2.76	0.28	11.50	11.97
95th-Percentile Queue Length [ft/ln]	389.17	285.69	0.00	5.79	440.19	56.67	68.97	7.04	287.47	299.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.35	56.74	56.74	0.00	48.85	48.85	72.11	2.00	2.38	141.20	14.20	15.01
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	62.17			48.85			11.42			14.43		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	18.04											
Intersection LOS	B											
Intersection V/C	0.672											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.971	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	437	974	711
d_b, Bicycle Delay [s]	48.88	48.83	21.14	33.29
l_b,int, Bicycle LOS Score for Intersection	2.289	1.566	2.722	2.419
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.461

Intersection Setup

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	22	0	35	1	1	1	150	2026	2	25	1564	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	0	35	1	1	1	150	2026	2	25	1564	12
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	9	0	0	0	40	535	1	7	413	3
Total Analysis Volume [veh/h]	23	0	37	1	1	1	158	2139	2	26	1652	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			17			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	40	0	0	40	0	35	105	0	15	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	16	132	132	3	118	118
g / C, Green / Cycle	0.08	0.08	0.08	0.10	0.82	0.82	0.02	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.00	0.09	0.39	0.39	0.01	0.31	0.31
s, saturation flow rate [veh/h]	1469	1589	1635	1781	3560	1869	1781	3560	1861
c, Capacity [veh/h]	168	133	167	180	2927	1536	34	2634	1377
d1, Uniform Delay [s]	68.04	68.76	67.27	68.21	0.00	0.00	77.62	0.29	0.29
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.12	0.04	12.41	0.57	1.08	29.20	0.48	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.28	0.02	0.88	0.48	0.48	0.77	0.41	0.42
d, Delay for Lane Group [s/veh]	68.40	69.88	67.32	80.62	0.57	1.08	106.82	0.77	1.21
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.90	1.48	0.12	6.77	0.23	0.46	1.34	0.41	0.60
50th-Percentile Queue Length [ft/ln]	22.61	37.09	2.94	169.21	5.75	11.47	33.43	10.31	15.00
95th-Percentile Queue Length [veh/ln]	1.63	2.67	0.21	11.04	0.41	0.83	2.41	0.74	1.08
95th-Percentile Queue Length [ft/ln]	40.69	66.77	5.30	275.88	10.34	20.65	60.18	18.56	27.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.40	68.40	69.88	67.32	67.32	67.32	80.62	0.74	1.08	106.82	0.92	1.21
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.31			67.32			6.23			2.55		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	5.67											
Intersection LOS	A											
Intersection V/C	0.461											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.032	1.751	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	412	412	1225	975
d_b, Bicycle Delay [s]	50.41	50.41	12.12	21.03
l_b,int, Bicycle LOS Score for Intersection	1.659	1.565	2.824	2.490
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	301	324	107	360	365	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.90	0.50	2.30	0.00	0.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	301	324	107	360	365	90
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	93	31	103	105	26
Total Analysis Volume [veh/h]	345	372	123	413	419	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	15		0		16	
v_ci, Inbound Pedestrian Volume crossing mi	16		0		15	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		15		8	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	11	11	3	18	11	11
g / C, Green / Cycle	0.29	0.29	0.09	0.49	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.19	0.24	0.07	0.22	0.23	0.07
s, saturation flow rate [veh/h]	1861	1551	1802	1865	1810	1559
c, Capacity [veh/h]	547	456	162	919	524	451
d1, Uniform Delay [s]	11.52	12.22	16.72	6.22	12.37	10.16
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.45	1.39	2.70	0.13	1.09	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.82	0.76	0.45	0.80	0.23
d, Delay for Lane Group [s/veh]	11.97	13.61	19.42	6.35	13.46	10.25
Lane Group LOS	B	B	B	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.96	2.34	1.02	1.43	2.63	0.51
50th-Percentile Queue Length [ft/ln]	49.11	58.59	25.57	35.67	65.63	12.74
95th-Percentile Queue Length [veh/ln]	3.54	4.22	1.84	2.57	4.73	0.92
95th-Percentile Queue Length [ft/ln]	88.40	105.47	46.02	64.21	118.13	22.93

Movement, Approach, & Intersection Results

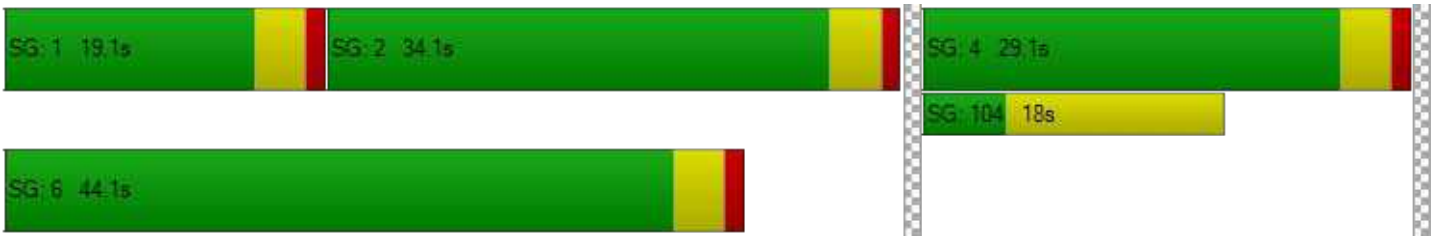
d_M, Delay for Movement [s/veh]	11.97	13.61	19.42	6.35	13.46	10.25
Movement LOS	B	B	B	A	B	B
d_A, Approach Delay [s/veh]	12.82		9.35		12.83	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.77					
Intersection LOS	B					
Intersection V/C	0.604					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	10.83	1.79
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.160	2.151
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1600	2133	1333
d_b, Bicycle Delay [s]	0.75	0.08	2.09
l_b,int, Bicycle LOS Score for Intersection	2.743	2.444	1.560
Bicycle LOS	B	B	A

Sequence

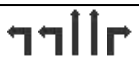
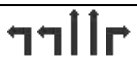
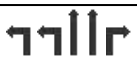
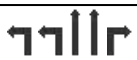
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Sand Hill Rd/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	308	521	144	348	958	158	269	757	262	118	591	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	308	521	144	348	958	158	269	757	262	118	591	172
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	137	38	91	252	42	71	199	69	31	155	45
Total Analysis Volume [veh/h]	324	548	151	366	1007	166	283	796	275	124	621	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			6			6			0		
v_di, Inbound Pedestrian Volume crossing m	0			6			6			1		
v_co, Outbound Pedestrian Volume crossing	2			1			3			2		
v_ci, Inbound Pedestrian Volume crossing mi	3			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			9			33			20		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	8	8	4	8	8	8	8	8	8	8	8
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	20	44	44	20	44	44	20	40	40	16	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.6	3.6	2.0	3.6	3.6	2.1	3.6	3.6	2.1	3.6	3.6
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.60	5.60	4.00	5.60	5.60	4.10	5.60	5.60	4.10	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.60	3.60	2.00	3.60	3.60	2.10	3.60	3.60	2.10	3.60	3.60
g_i, Effective Green Time [s]	13	48	48	15	49	49	12	30	30	8	26	26
g / C, Green / Cycle	0.11	0.40	0.40	0.12	0.41	0.41	0.10	0.25	0.25	0.07	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.15	0.10	0.11	0.28	0.11	0.08	0.22	0.18	0.04	0.17	0.12
s, saturation flow rate [veh/h]	3459	3560	1540	3459	3560	1559	3459	3560	1503	3459	3560	1536
c, Capacity [veh/h]	387	1413	611	426	1454	637	347	900	380	230	779	336
d1, Uniform Delay [s]	52.30	25.83	24.15	51.66	29.33	23.49	52.97	43.21	40.57	54.31	44.40	41.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.14	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.87	0.80	0.96	5.14	2.74	0.99	4.69	3.12	3.43	1.96	1.92	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.39	0.25	0.86	0.69	0.26	0.82	0.88	0.72	0.54	0.80	0.54
d, Delay for Lane Group [s/veh]	57.17	26.63	25.11	56.79	32.07	24.48	57.66	46.34	44.00	56.27	46.32	42.71
Lane Group LOS	E	C	C	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.00	5.66	3.00	5.66	12.21	3.25	4.37	11.57	7.62	1.87	8.84	4.81
50th-Percentile Queue Length [ft/ln]	125.09	141.42	74.92	141.39	305.17	81.32	109.33	289.35	190.43	46.65	220.96	120.32
95th-Percentile Queue Length [veh/ln]	8.67	9.56	5.39	9.56	17.94	5.85	7.80	17.15	12.14	3.36	13.71	8.41
95th-Percentile Queue Length [ft/ln]	216.81	238.94	134.86	238.90	448.41	146.37	195.07	428.83	303.59	83.97	342.85	210.26

Movement, Approach, & Intersection Results

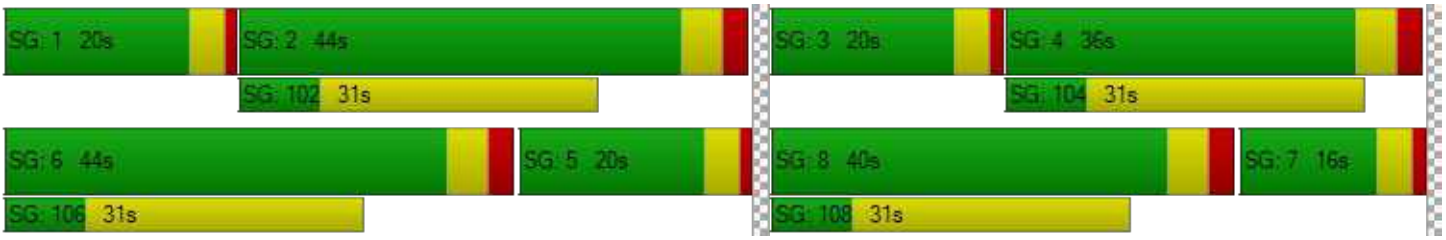
d_M, Delay for Movement [s/veh]	57.17	26.63	25.11	56.79	32.07	24.48	57.66	46.34	44.00	56.27	46.32	42.71
Movement LOS	E	C	C	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	36.08			37.13			48.23			46.95		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.89											
Intersection LOS	D											
Intersection V/C	0.694											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.55	49.55	49.55	49.55
l_p,int, Pedestrian LOS Score for Intersectio	3.013	3.093	3.013	2.967
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	573	506
d_b, Bicycle Delay [s]	28.18	27.91	31.08	33.83
l_b,int, Bicycle LOS Score for Intersection	2.404	2.829	2.677	2.324
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.781

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	175	17	305	0	6	23	6	0	2	93	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	175	17	305	0	6	23	6	0	2	93	124
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	47	5	82	0	2	6	2	0	1	25	33
Total Analysis Volume [veh/h]	0	188	18	327	0	6	25	6	0	2	100	133
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	682	546	616
Degree of Utilization, x	0.78	0.07	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.61	0.22	1.79
95th-Percentile Queue Length [ft]	190.19	5.43	44.66
Approach Delay [s/veh]	24.45	10.07	12.42
Approach LOS	C	B	B
Intersection Delay [s/veh]	18.98		
Intersection LOS	C		

Generated with PTV VISTRO

Version 2023 (SP 0-8)

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	154	125	8	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	125	8	0	0	0	0	0
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	34	2	0	0	0	0	0
Total Analysis Volume [veh/h]	165	134	9	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	589	535
Degree of Utilization, x	0.52	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.02	0.00
95th-Percentile Queue Length [ft]	75.61	0.00
Approach Delay [s/veh]	15.60	0.00
Approach LOS	C	A
Intersection Delay [s/veh]	18.98	
Intersection LOS	C	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	60	347	106	43	455	67	121	19	45	53	30	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	347	106	43	455	67	121	19	45	53	30	58
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	101	31	13	132	19	35	6	13	15	9	17
Total Analysis Volume [veh/h]	70	403	123	50	529	78	141	22	52	62	35	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			5			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	0			6			0			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	11			7			1			8		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	48	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	21	26	20	12	12	12
g / C, Green / Cycle	0.56	0.43	0.56	0.42	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.30	0.05	0.33	0.21	0.05	0.06
s, saturation flow rate [veh/h]	976	1782	1012	1821	1036	1326	1639
c, Capacity [veh/h]	540	771	588	769	387	155	413
d1, Uniform Delay [s]	6.92	10.86	6.13	11.90	17.97	14.28	14.18
k, delay calibration	0.23	0.23	0.11	0.23	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	2.29	0.06	3.88	1.25	1.65	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.68	0.09	0.79	0.56	0.40	0.25
d, Delay for Lane Group [s/veh]	7.15	13.15	6.19	15.78	19.22	15.93	14.48
Lane Group LOS	A	B	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.23	3.77	0.15	4.96	2.18	0.55	0.82
50th-Percentile Queue Length [ft/ln]	5.86	94.33	3.78	123.93	54.52	13.76	20.45
95th-Percentile Queue Length [veh/ln]	0.42	6.79	0.27	8.61	3.93	0.99	1.47
95th-Percentile Queue Length [ft/ln]	10.55	169.79	6.81	215.22	98.14	24.77	36.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.15	13.15	13.15	6.19	15.78	15.78	19.22	19.22	19.22	15.93	14.48	14.48
Movement LOS	A	B	B	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.44			15.05			19.22			15.03		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.65											
Intersection LOS	B											
Intersection V/C	0.614											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	-4.0	0.0	-5.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	27.94	0.00	29.04
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.464	0.000	2.069
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1262	1262	1262	1262
d_b, Bicycle Delay [s]	3.26	3.25	3.24	3.25
l_b,int, Bicycle LOS Score for Intersection	2.543	2.644	1.914	1.830
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.723

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	329	757	425	583	631	139
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	329	757	425	583	631	139
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	193	108	149	161	35
Total Analysis Volume [veh/h]	336	772	434	595	644	142
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	29		41		20	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	10	7	10	8	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	38	48	44	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	33	33	33	56	93	27	27
g / C, Green / Cycle	0.25	0.25	0.25	0.43	0.72	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.19	0.21	0.21	0.24	0.38	0.18	0.09
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1565	3560	1537
c, Capacity [veh/h]	454	476	476	766	1121	749	323
d1, Uniform Delay [s]	44.50	45.50	45.50	27.89	8.34	49.50	44.52
k, delay calibration	0.13	0.17	0.17	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.96	5.27	5.27	3.02	1.80	3.05	0.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.81	0.81	0.57	0.53	0.86	0.44
d, Delay for Lane Group [s/veh]	47.47	50.77	50.77	30.91	10.14	52.55	45.46
Lane Group LOS	D	D	D	C	B	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.33	12.39	12.39	10.78	7.54	10.40	4.08
50th-Percentile Queue Length [ft/ln]	258.20	309.73	309.73	269.62	188.56	259.95	102.08
95th-Percentile Queue Length [veh/ln]	15.60	18.16	18.16	16.17	12.05	15.69	7.35
95th-Percentile Queue Length [ft/ln]	389.96	454.05	454.05	404.26	301.16	392.15	183.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.47	50.77	30.91	10.14	52.55	45.46
Movement LOS	D	D	C	B	D	D
d_A, Approach Delay [s/veh]	49.77		18.90		51.27	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	39.31					
Intersection LOS	D					
Intersection V/C	0.723					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	521	601
d_b, Bicycle Delay [s]	29.28	36.27	32.11
l_b,int, Bicycle LOS Score for Intersection	2.474	1.560	2.208
Bicycle LOS	B	A	B

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road/101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	2106	0	0	986	605	326
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2106	0	0	986	605	326
Peak Hour Factor	0.9550	1.0000	1.0000	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	551	0	0	258	158	85
Total Analysis Volume [veh/h]	2205	0	0	1032	634	341
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	100	0	0	100	100	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	70	0	0	70	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	Yes	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	68	68	28	28
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.62	0.29	0.18	0.12
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2401	2401	971	790
d1, Uniform Delay [s]	13.97	7.49	31.73	29.49
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.08	0.56	3.41	1.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.43	0.65	0.43
d, Delay for Lane Group [s/veh]	21.05	8.05	35.14	31.21
Lane Group LOS	C	A	D	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.21	4.67	7.11	3.51
50th-Percentile Queue Length [ft/ln]	505.30	116.67	177.68	87.78
95th-Percentile Queue Length [veh/ln]	27.59	8.21	11.48	6.32
95th-Percentile Queue Length [ft/ln]	689.63	205.24	286.98	158.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.05	0.00	0.00	8.05	35.14	31.21
Movement LOS	C			A	D	C
d_A, Approach Delay [s/veh]	21.05		8.05		33.76	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	20.81					
Intersection LOS	C					
Intersection V/C	0.863					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	41.46	39.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.010	2.374
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	515
d_b, Bicycle Delay [s]	6.02	6.04	27.58
l_b,int, Bicycle LOS Score for Intersection	3.379	2.411	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	27.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.922

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	407	192	21	20	118	339	11	70	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	407	192	21	20	118	339	11	70	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	110	52	6	5	32	92	3	19	2
Total Analysis Volume [veh/h]	10	193	16	442	208	23	22	128	368	12	76	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	434	467	480	519	480	536	438
Degree of Utilization, x	0.02	0.45	0.92	0.44	0.31	0.69	0.22

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.07	2.28	10.76	2.26	1.32	5.26	0.82
95th-Percentile Queue Length [ft]	1.77	56.91	268.97	56.55	33.04	131.46	20.38
Approach Delay [s/veh]	16.30		38.84		20.17		13.48
Approach LOS	C		E		C		B
Intersection Delay [s/veh]	27.53						
Intersection LOS	D						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1330	588	0	900	605	0	0	0	677	0	368
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1330	588	0	900	605	0	0	0	677	0	368
Peak Hour Factor	1.0000	0.9520	0.9520	1.0000	0.9520	0.9520	1.0000	1.0000	1.0000	0.9520	1.0000	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	349	154	0	236	159	0	0	0	178	0	97
Total Analysis Volume [veh/h]	0	1397	618	0	945	636	0	0	0	711	0	387
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	112	0	0	112	0	0	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	108	108	108		29	29
g / C, Green / Cycle	0.74	0.74	0.74		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.27	0.19	0.41		0.21	0.14
s, saturation flow rate [veh/h]	5094	5094	1550		3459	2813
c, Capacity [veh/h]	3794	3794	1154		692	563
d1, Uniform Delay [s]	6.50	5.79	7.87		57.93	53.73
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.28	0.16	1.90		23.55	1.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.25	0.55		1.03	0.69
d, Delay for Lane Group [s/veh]	6.78	5.95	9.76		81.47	55.24
Lane Group LOS	A	A	A		F	E
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.84	2.91	8.44		14.94	6.70
50th-Percentile Queue Length [ft/ln]	120.95	72.82	211.05		373.46	167.39
95th-Percentile Queue Length [veh/ln]	8.45	5.24	13.21		21.60	10.94
95th-Percentile Queue Length [ft/ln]	211.14	131.08	330.18		539.95	273.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.78	0.00	0.00	5.95	9.76	0.00	0.00	0.00	81.47	0.00	55.24
Movement LOS		A			A	A				F		E
d_A, Approach Delay [s/veh]	4.77			7.48			0.00			72.23		
Approach LOS	A			A			A			E		
d_I, Intersection Delay [s/veh]	23.99											
Intersection LOS	C											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.74	0.00	63.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.998	0.000	1.447	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1491	1491	0	400
d_b, Bicycle Delay [s]	4.70	4.72	72.46	46.36
l_b,int, Bicycle LOS Score for Intersection	2.328	2.429	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	92.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1388	674	0	1069	597	0	0	0	342	0	849
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1388	674	0	1069	597	0	0	0	342	0	849
Peak Hour Factor	1.0000	0.9330	0.9330	1.0000	0.9330	0.9330	1.0000	1.0000	1.0000	0.9330	1.0000	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	372	181	0	286	160	0	0	0	92	0	227
Total Analysis Volume [veh/h]	0	1488	722	0	1146	640	0	0	0	367	0	910
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	2.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	95	0	0	95	0	0	0	0	25	0	25
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	91	91	116		21	46
g / C, Green / Cycle	0.63	0.63	0.80		0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.50	0.46	0.38		0.11	0.55
s, saturation flow rate [veh/h]	3003	1556	3003		3459	1658
c, Capacity [veh/h]	1886	977	2401		502	525
d1, Uniform Delay [s]	19.86	18.35	4.70		59.24	49.51
k, delay calibration	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	3.44	5.00	0.68		2.08	337.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.74	0.48		0.73	1.73
d, Delay for Lane Group [s/veh]	23.30	23.35	5.38		61.31	387.25
Lane Group LOS	C	C	A		E	F
Critical Lane Group	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	12.49	17.36	3.35		6.62	34.09
50th-Percentile Queue Length [ft/ln]	312.37	433.97	83.70		165.49	852.30
95th-Percentile Queue Length [veh/ln]	18.29	24.19	6.03		10.84	55.79
95th-Percentile Queue Length [ft/ln]	457.30	604.79	150.66		270.98	1394.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.30	23.35	0.00	5.38	0.00	0.00	0.00	0.00	61.31	0.00	387.25
Movement LOS		C	C		A					E		F
d_A, Approach Delay [s/veh]	23.32			3.54			0.00			293.58		
Approach LOS	C			A			A			F		
d_I, Intersection Delay [s/veh]	92.92											
Intersection LOS	F											
Intersection V/C	0.707											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	63.75	63.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.111	1.447	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1601	0	290
d_b, Bicycle Delay [s]	10.05	2.90	72.47	52.99
l_b,int, Bicycle LOS Score for Intersection	2.775	2.190	4.132	1.560
Bicycle LOS	C	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.397

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	15	252	58	156	146	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	252	58	156	146	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	68	16	42	40	2
Total Analysis Volume [veh/h]	16	274	63	170	159	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	629	690	808	676
Degree of Utilization, x	0.03	0.40	0.29	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	1.91	1.20	0.97
95th-Percentile Queue Length [ft]	1.96	47.70	29.88	24.26
Approach Delay [s/veh]	11.17		9.25	10.07
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.25			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	35.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.300

Intersection Setup

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	677	33	8	613	51	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	677	33	8	613	51	24
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	169	8	2	153	13	6
Total Analysis Volume [veh/h]	677	33	8	613	51	24
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.30	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	9.06	0.00	35.20	22.16
Movement LOS	A	A	A	A	E	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	1.51	1.51
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.33	0.33	37.77	37.77
d_A, Approach Delay [s/veh]	0.00		0.12		31.03	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.71					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	28.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.171

Intersection Setup

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	651	51	0	589	32	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	651	51	0	589	32	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	163	13	0	147	8	4
Total Analysis Volume [veh/h]	651	51	0	589	32	16
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.17	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	9.02	0.00	28.28	16.94
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.76	0.76
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	18.92	18.92
d_A, Approach Delay [s/veh]	0.00		0.00		24.50	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.88					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	All-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.353

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	27	159	45	11	189	9	40	125	10	3	99	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	159	45	11	189	9	40	125	10	3	99	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	43	12	3	51	2	11	34	3	1	27	3
Total Analysis Volume [veh/h]	29	173	49	12	205	10	43	136	11	3	108	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	710	696	666	658
Degree of Utilization, x	0.35	0.33	0.29	0.19

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.59	1.42	1.18	0.68
95th-Percentile Queue Length [ft]	39.87	35.48	29.39	17.06
Approach Delay [s/veh]	10.81	10.66	10.56	9.72
Approach LOS	B	B	B	A
Intersection Delay [s/veh]	10.54			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.433

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	203	71	38	254	106	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	71	38	254	106	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	20	11	71	29	13
Total Analysis Volume [veh/h]	226	79	42	282	118	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	771	748	672
Degree of Utilization, x	0.40	0.43	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.90	2.20	1.00
95th-Percentile Queue Length [ft]	47.52	55.08	25.00
Approach Delay [s/veh]	10.69	11.45	10.16
Approach LOS	B	B	B
Intersection Delay [s/veh]	10.89		
Intersection LOS	B		

Generated with PTV VISTRO

Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 292: Ravesnwood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	73.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.048

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	4	689	0	0	684	5	0	0	0	5	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	689	0	0	684	5	0	0	0	5	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	185	0	0	184	1	0	0	0	1	0	5
Total Analysis Volume [veh/h]	4	741	0	0	735	5	0	0	0	5	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.85	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	73.19	33.98	33.21	66.60	28.54	27.68	7.25	0.00	0.00	7.23	0.00	0.00
Movement LOS	F	D	D	F	D	D	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	12.26	12.26	12.26	10.68	10.68	10.68	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	306.38	306.38	306.38	266.97	266.97	266.97	0.00	0.00	0.00	0.25	0.25	0.25
d_A, Approach Delay [s/veh]	34.19			28.53			2.42			1.51		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	30.90											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.388

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	55	2	35	5	0	2	12	240	4	3	123	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	2	35	5	0	2	12	240	4	3	123	24
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	1	11	2	0	1	4	73	1	1	38	7
Total Analysis Volume [veh/h]	67	2	43	6	0	2	15	293	5	4	150	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	725	686	808	799
Degree of Utilization, x	0.15	0.01	0.39	0.23

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.54	0.04	1.84	0.88
95th-Percentile Queue Length [ft]	13.61	0.88	46.08	22.04
Approach Delay [s/veh]	8.87	8.31	10.25	8.84
Approach LOS	A	A	B	A
Intersection Delay [s/veh]	9.56			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	8.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	330	20	12	179
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	330	20	12	179
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	83	5	3	45
Total Analysis Volume [veh/h]	0	0	330	20	12	179
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	12.27	10.13	0.00	0.00	7.99	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.50	0.50
d_A, Approach Delay [s/veh]	11.20		0.00		0.50	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.18					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.400

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	1	2	348	2	2	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2	348	2	2	177
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	87	1	1	44
Total Analysis Volume [veh/h]	1	2	348	2	2	177
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	763	875	843
Degree of Utilization, x	0.00	0.40	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	1.94	0.80
95th-Percentile Queue Length [ft]	0.30	48.55	20.04
Approach Delay [s/veh]	7.74	9.83	8.42
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.34		
Intersection LOS	A		

Vistro File: P:\...\Parkline_Vistro_new Variant_AM_2024.03.12.vistro
Report File: P:\...\CPAM.pdf

Scenario 20 Cumulative (2040) Plus Project AM
3/12/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SEB Right	0.805	23.1	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	SWB Left	0.720	29.0	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.769	76.4	E
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	EB Left	0.917	31.3	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.808	31.8	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NWB Left	0.716	424.0	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	NEB Left	1.428	618.1	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NWB Left	0.883	17.7	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	SB Left	0.807	25.2	C
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	SB Left	0.906	61.0	E
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.004	83.7	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Left	0.971	55.3	E
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.432	329.1	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	SWB Right	1.338	113.8	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	WB Right	0.966	88.3	F
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.793	22.7	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.595	16.7	B
			HCM 7th				

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	NEB Thru	0.748	58.6	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SEB Thru	0.687	52.6	D
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NEB Thru	0.848	41.8	D
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	4.334	77.4	E
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	NWB Left	0.729	39.6	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	NWB Left	0.613	36.0	D
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	SWB Right	0.498	8.7	A
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NEB Right	0.799	57.0	E
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.460	8.8	A
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.657	19.2	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.408	5.0	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.614	11.5	B
39	Santa Cruz Ave/Sand Hill Rd	Signalized	HCM 7th Edition	NWB Left	0.729	47.5	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	EB Right	1.443	165.0	F
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NWB Left	1.127	91.5	F
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	SB Left	0.800	38.4	D
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.944	22.7	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	NWB Right	0.859	24.5	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	1.157	38.5	D
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWBL2	0.816	14.3	B
224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.513	11.4	B

250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.211	23.3	C
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Left	0.062	20.8	C
254	Glenwood Ave and Laurel Street	All-way stop	HCM 7th Edition	NWB Thru	1.309	120.8	F
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	NEB Thru	0.976	47.3	E
292	Ravenswood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	SEB Left	0.153	30.9	D
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.553	11.6	B
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SEB Left	0.004	8.3	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.510	10.6	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	896	1324	217	1166	513
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	896	1324	217	1166	513
Peak Hour Factor	1.0000	0.9550	0.9550	1.0000	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	235	347	54	305	134
Total Analysis Volume [veh/h]	0	938	1386	217	1221	537
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	60	60	0	35	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	55	55	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	53	50	33	33
g / C, Green / Cycle	0.58	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.23	0.39	0.35	0.34
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	2334	1995	1268	583
d1, Uniform Delay [s]	10.22	14.28	27.98	27.34
k, delay calibration	0.50	0.50	0.04	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	2.02	2.58	18.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.69	0.96	0.92
d, Delay for Lane Group [s/veh]	10.73	16.30	30.56	45.61
Lane Group LOS	B	B	C	D
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.65	9.52	12.69	13.48
50th-Percentile Queue Length [ft/ln]	116.23	238.07	317.31	336.89
95th-Percentile Queue Length [veh/ln]	8.19	14.58	18.54	19.50
95th-Percentile Queue Length [ft/ln]	204.63	364.60	463.38	487.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.73	16.30	0.00	30.56	45.61
Movement LOS		B	B		C	D
d_A, Approach Delay [s/veh]	10.73		16.30		35.16	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	23.14					
Intersection LOS	C					
Intersection V/C	0.805					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.50	0.00	32.14
l_p,int, Pedestrian LOS Score for Intersectio	2.946	0.000	2.556
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	1119	686
d_b, Bicycle Delay [s]	8.76	8.75	19.45
l_b,int, Bicycle LOS Score for Intersection	2.333	2.703	1.560
Bicycle LOS	B	B	A

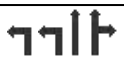
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	60	1222	2	274	1237	358	12	5	175	297	4	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	1222	2	274	1237	358	12	5	175	297	4	2
Peak Hour Factor	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930	0.9930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	308	1	69	311	90	3	1	44	75	1	1
Total Analysis Volume [veh/h]	60	1231	2	276	1246	361	12	5	176	299	4	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			2		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	60	60	20	65	65	0	40	0	40	40	40
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	85	85	14	79	79	0	16	0	20	20	20
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	84	84	10	89	89	14	14	17	17
g / C, Green / Cycle	0.06	0.62	0.62	0.07	0.66	0.66	0.10	0.10	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.08	0.43	0.46	0.01	0.06	0.09	0.09
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1732	1806	2750	1781	1780
c, Capacity [veh/h]	104	2221	1165	257	1224	1134	186	283	223	222
d1, Uniform Delay [s]	62.03	12.38	12.38	62.56	14.20	14.99	54.88	57.99	56.59	56.59
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.74	0.46	0.88	40.25	2.80	3.70	0.16	1.65	2.77	2.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.36	0.36	1.07	0.66	0.71	0.09	0.62	0.69	0.69
d, Delay for Lane Group [s/veh]	65.77	12.85	13.27	102.82	17.00	18.68	55.04	59.64	59.36	59.37
Lane Group LOS	E	B	B	F	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.11	5.89	6.31	5.82	14.90	15.74	0.54	2.98	5.21	5.21
50th-Percentile Queue Length [ft/ln]	52.73	147.15	157.83	145.61	372.61	393.58	13.51	74.41	130.17	130.14
95th-Percentile Queue Length [veh/ln]	3.80	9.87	10.43	10.01	21.24	22.25	0.97	5.36	8.95	8.95
95th-Percentile Queue Length [ft/ln]	94.92	246.63	260.85	250.33	530.89	556.26	24.31	133.93	223.73	223.68

Movement, Approach, & Intersection Results

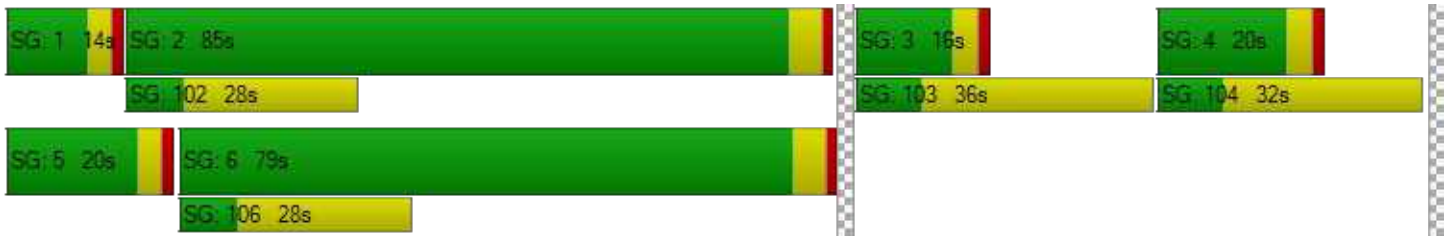
d_M, Delay for Movement [s/veh]	65.77	12.99	13.27	102.82	17.59	18.68	55.04	55.04	59.64	59.36	59.37	59.37
Movement LOS	E	B	B	F	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	15.44			30.29			59.24			59.36		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	29.00											
Intersection LOS	C											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.07	56.07	56.99	56.99
l_p,int, Pedestrian LOS Score for Intersectio	3.028	3.196	2.396	2.158
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1096	175	234
d_b, Bicycle Delay [s]	11.23	13.81	56.28	52.67
l_b,int, Bicycle LOS Score for Intersection	2.271	3.113	1.878	2.063
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	76.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	290	741	120	28	881	396	537	54	228	57	66	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	290	741	120	28	881	396	537	54	228	57	66	21
Peak Hour Factor	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870	0.9870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	188	30	7	223	100	136	14	58	14	17	5
Total Analysis Volume [veh/h]	294	751	122	28	893	401	544	55	231	58	67	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	20	80	80	18	72	72	35	35	35	0	35	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	58	58	15	58	58	37	45	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	97	97	5	90	90	31	31	31	13	13
g / C, Green / Cycle	0.08	0.63	0.63	0.03	0.58	0.58	0.20	0.20	0.20	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.17	0.24	0.24	0.02	0.36	0.37	0.17	0.17	0.15	0.03	0.05
s, saturation flow rate [veh/h]	1781	1870	1768	1781	1870	1676	1781	1797	1555	1781	1789
c, Capacity [veh/h]	150	1174	1110	59	1079	967	359	362	313	153	154
d1, Uniform Delay [s]	71.04	14.12	14.16	73.65	21.77	21.95	59.43	59.38	57.87	66.97	68.14
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	457.25	0.94	1.01	2.17	2.77	3.20	3.81	3.70	2.53	1.14	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.96	0.38	0.38	0.47	0.63	0.64	0.83	0.83	0.74	0.38	0.57
d, Delay for Lane Group [s/veh]	528.30	15.06	15.17	75.82	24.55	25.15	63.24	63.07	60.39	68.12	70.62
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	24.95	7.88	7.55	1.13	16.87	15.56	11.78	11.81	8.80	2.25	3.50
50th-Percentile Queue Length [ft/ln]	623.69	196.90	188.76	28.30	421.81	389.00	294.48	295.30	220.01	56.26	87.61
95th-Percentile Queue Length [veh/ln]	39.50	12.48	12.06	2.04	23.61	22.03	17.41	17.45	13.67	4.05	6.31
95th-Percentile Queue Length [ft/ln]	987.48	311.96	301.42	50.94	590.22	550.73	435.19	436.21	341.63	101.26	157.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	528.30	15.10	15.17	75.82	24.69	25.15	63.17	63.07	60.39	68.12	70.62	70.62
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	144.40			25.92			62.39			69.62		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	76.40											
Intersection LOS	E											
Intersection V/C	0.769											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.92	66.92	66.92	66.92
l_p,int, Pedestrian LOS Score for Intersectio	2.924	2.979	2.480	2.061
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	529	423
d_b, Bicycle Delay [s]	33.36	33.32	42.08	48.20
l_b,int, Bicycle LOS Score for Intersection	2.522	2.650	2.929	1.801
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	610	72	337	813	62	193	44	1	50	49	387
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	610	72	337	813	62	193	44	1	50	49	387
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	161	19	89	215	16	51	12	0	13	13	102
Total Analysis Volume [veh/h]	0	644	76	356	859	65	204	46	1	53	52	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	56	34	56	22	56	34	34	34	34	0	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	32	32	19	54	54	32	32
g / C, Green / Cycle	0.35	0.35	0.21	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.20	0.25	0.25	0.47	0.29
s, saturation flow rate [veh/h]	1870	1626	1781	1870	1817	534	1762
c, Capacity [veh/h]	695	570	377	1113	1082	261	667
d1, Uniform Delay [s]	23.95	24.01	35.02	9.85	9.87	34.49	27.04
k, delay calibration	0.50	0.50	0.17	0.50	0.50	0.50	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.14	4.46	16.64	1.16	1.21	46.43	7.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.59	0.94	0.42	0.42	0.96	0.77
d, Delay for Lane Group [s/veh]	27.10	28.46	51.65	11.01	11.08	80.92	34.35
Lane Group LOS	C	C	D	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.95	6.29	9.14	4.74	4.65	8.98	11.08
50th-Percentile Queue Length [ft/ln]	173.82	157.15	228.50	118.43	116.33	224.61	276.89
95th-Percentile Queue Length [veh/ln]	11.28	10.40	14.10	8.31	8.19	13.90	16.53
95th-Percentile Queue Length [ft/ln]	281.93	259.94	352.45	207.67	204.77	347.50	413.33

Movement, Approach, & Intersection Results

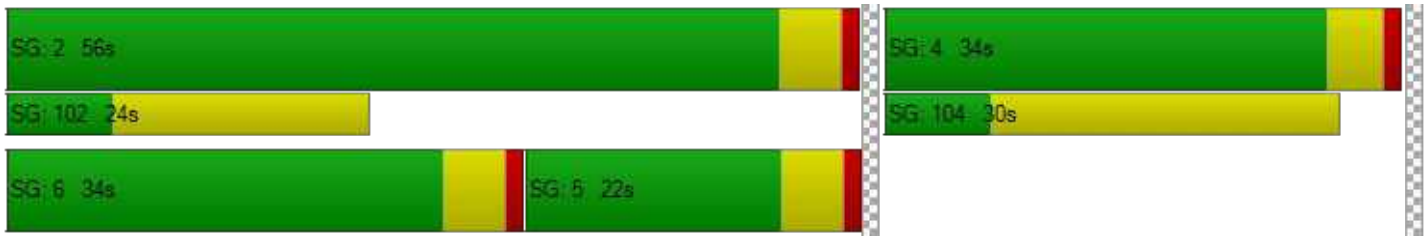
d_M, Delay for Movement [s/veh]	27.10	27.65	28.46	51.65	11.04	11.08	80.92	80.92	80.92	34.35	34.35	34.35
Movement LOS	C	C	C	D	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	27.74			22.34			80.92			34.35		
Approach LOS	C			C			F			C		
d_I, Intersection Delay [s/veh]	31.29											
Intersection LOS	C											
Intersection V/C	0.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	28.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	20.78
l_p,int, Pedestrian LOS Score for Intersectio	2.670	3.167	1.864	2.177
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	1130	650	650
d_b, Bicycle Delay [s]	20.79	8.54	20.54	20.53
l_b,int, Bicycle LOS Score for Intersection	2.154	2.616	1.974	2.408
Bicycle LOS	B	B	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	113	490	418	524	404	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	490	418	524	404	82
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	132	112	141	109	22
Total Analysis Volume [veh/h]	122	527	449	563	434	88
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing m	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	33	44	44	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	37	48	48	93	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	5	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	Yes	No	No	No	Yes	
Pedestrian Recall	No	No	No	Yes	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.60
g_i, Effective Green Time [s]	35	75	38	91	48
g / C, Green / Cycle	0.27	0.58	0.29	0.70	0.37
(v / s)_i Volume / Saturation Flow Rate	0.07	0.33	0.25	0.30	0.29
s, saturation flow rate [veh/h]	1781	1574	1781	1870	1794
c, Capacity [veh/h]	479	881	525	1311	664
d1, Uniform Delay [s]	37.29	18.84	43.25	8.32	36.39
k, delay calibration	0.50	0.50	0.31	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.28	2.99	10.71	1.03	9.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.60	0.86	0.43	0.79
d, Delay for Lane Group [s/veh]	38.57	21.83	53.96	9.35	45.50
Lane Group LOS	D	C	D	A	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.25	10.99	14.99	6.57	16.14
50th-Percentile Queue Length [ft/ln]	81.24	274.80	374.76	164.33	403.45
95th-Percentile Queue Length [veh/ln]	5.85	16.43	21.34	10.78	22.73
95th-Percentile Queue Length [ft/ln]	146.23	410.73	533.51	269.45	568.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.57	21.83	53.96	9.35	45.50	45.50
Movement LOS	D	C	D	A	D	D
d_A, Approach Delay [s/veh]	24.98		29.14		45.50	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	31.82					
Intersection LOS	C					
Intersection V/C	0.808					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	56.33	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.343	2.711	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	1361	623
d_b, Bicycle Delay [s]	36.98	6.76	31.40
l_b,int, Bicycle LOS Score for Intersection	1.560	3.229	2.421
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	424.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	56	35	39	146	118	328	425	626	230	281	514	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	35	39	146	118	328	425	626	230	281	514	116
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	10	11	40	32	90	117	172	63	77	141	32
Total Analysis Volume [veh/h]	62	38	43	160	130	360	467	688	253	309	565	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing m	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	47.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	62	25	62	57	25	57	28	62	25	22	57	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	55	38	55	83	38	83	9	55	38	37	83	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	2.5	2.6	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	4.50	4.60	4.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	2.50	2.60	2.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	42	42	42	42	5	53	53	26	75	75
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.04	0.41	0.41	0.20	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.07	0.05	0.21	0.24	0.26	0.19	0.18	0.17	0.19	0.20
s, saturation flow rate [veh/h]	905	1690	1352	1530	1781	3560	1384	1781	1870	1708
c, Capacity [veh/h]	155	545	479	493	69	1457	566	360	1074	981
d1, Uniform Delay [s]	55.29	31.34	40.53	38.57	62.50	28.12	26.98	50.06	14.55	14.64
k, delay calibration	0.10	0.10	0.22	0.27	0.50	0.50	0.50	0.25	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.59	0.12	2.55	5.19	2647.56	1.10	2.54	12.70	0.83	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.15	0.61	0.73	6.82	0.47	0.45	0.86	0.33	0.34
d, Delay for Lane Group [s/veh]	56.89	31.46	43.08	43.77	2710.06	29.22	29.53	62.76	15.38	15.59
Lane Group LOS	E	C	D	D	F	C	C	E	B	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.05	1.89	8.54	10.77	52.64	7.99	5.88	10.88	5.65	5.35
50th-Percentile Queue Length [ft/ln]	51.19	47.36	213.44	269.14	1316.05	199.63	146.93	271.95	141.28	133.84
95th-Percentile Queue Length [veh/ln]	3.69	3.41	13.33	16.15	76.68	12.62	9.85	16.29	9.55	9.15
95th-Percentile Queue Length [ft/ln]	92.13	85.24	333.24	403.66	1916.96	315.49	246.33	407.18	238.75	228.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.89	31.46	31.46	43.08	43.08	43.77	2710.06	29.22	29.53	62.76	15.46	15.59
Movement LOS	E	C	C	D	D	D	F	C	C	E	B	B
d_A, Approach Delay [s/veh]	42.48			43.46			918.45			30.08		
Approach LOS	D			D			F			C		
d_I, Intersection Delay [s/veh]	423.99											
Intersection LOS	F											
Intersection V/C	0.716											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	54.47	54.47
l_p,int, Pedestrian LOS Score for Intersectio	2.146	2.364	3.111	2.886
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	777	1208
d_b, Bicycle Delay [s]	35.96	36.23	24.49	10.40
l_b,int, Bicycle LOS Score for Intersection	1.796	2.632	2.721	2.385
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	618.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.428

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	21	0	93	7	0	87	161	771	6	115	600	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	0	93	7	0	87	161	771	6	115	600	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	26	2	0	24	45	214	2	32	167	17
Total Analysis Volume [veh/h]	23	0	103	8	0	97	179	857	7	128	667	69
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

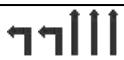
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.43	0.00	0.23	0.47	0.00	0.27	0.21	0.01	0.00	0.16	0.01	0.00
d_M, Delay for Movement [s/veh]	618.14	512.48	402.82	267.39	178.54	65.92	10.21	0.00	0.00	10.53	0.00	0.00
Movement LOS	F	F	F	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	10.70	10.70	10.70	4.39	4.39	4.39	0.77	0.00	0.00	0.59	0.00	0.00
95th-Percentile Queue Length [ft/ln]	267.41	267.41	267.41	109.84	109.84	109.84	19.27	0.00	0.00	14.65	0.00	0.00
d_A, Approach Delay [s/veh]	442.13			81.27			1.75			1.56		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	31.53											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	1033	81	1211	3494	159	388
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1033	81	1211	3494	159	388
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	279	22	328	945	43	105
Total Analysis Volume [veh/h]	1118	88	1311	3781	172	420
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	113.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	60	144	84	144	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	5
Pedestrian Clearance [s]	35	13	0	13	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	31	31	47	82	11	62
g / C, Green / Cycle	0.30	0.30	0.45	0.79	0.11	0.60
(v / s)_i Volume / Saturation Flow Rate	0.22	0.06	0.38	0.74	0.05	0.10
s, saturation flow rate [veh/h]	5094	1569	3459	5094	3459	4220
c, Capacity [veh/h]	1546	476	1572	4039	383	2427
d1, Uniform Delay [s]	31.98	26.42	24.65	8.55	42.81	10.32
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.65	0.19	1.22	1.35	0.82	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.18	0.83	0.94	0.45	0.17
d, Delay for Lane Group [s/veh]	32.63	26.61	25.87	9.90	43.63	10.35
Lane Group LOS	C	C	C	A	D	B
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.67	1.50	12.47	9.76	2.06	1.41
50th-Percentile Queue Length [ft/ln]	191.80	37.58	311.76	244.12	51.51	35.28
95th-Percentile Queue Length [veh/ln]	12.21	2.71	18.26	14.89	3.71	2.54
95th-Percentile Queue Length [ft/ln]	305.36	67.64	456.55	372.24	92.73	63.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.63	26.61	25.87	9.90	43.63	10.35
Movement LOS	C	C	C	A	D	B
d_A, Approach Delay [s/veh]	32.19		14.01		20.02	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	17.71					
Intersection LOS	B					
Intersection V/C	0.883					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.80	0.00	42.80
l_p,int, Pedestrian LOS Score for Intersectio	3.919	0.000	2.925
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	992	2686	564
d_b, Bicycle Delay [s]	13.06	6.06	26.50
l_b,int, Bicycle LOS Score for Intersection	2.223	4.360	1.670
Bicycle LOS	B	E	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	114	248	417	10	31	27	60	754	248	807	2459	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	248	417	10	31	27	60	754	248	807	2459	41
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	66	111	3	8	7	16	201	66	215	655	11
Total Analysis Volume [veh/h]	122	264	445	11	33	29	64	804	264	860	2622	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing m	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	149	50	25	50	149
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	7	0	7	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	16	20	45	1	6	6	59	33	33	59	50	50
g / C, Green / Cycle	0.17	0.21	0.47	0.01	0.06	0.06	0.62	0.35	0.35	0.62	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.15	0.12	0.11	0.01	0.01	0.02	0.17	0.16	0.17	0.49	0.51	0.03
s, saturation flow rate [veh/h]	797	2249	4220	937	3560	1552	368	5094	1589	1747	5094	1589
c, Capacity [veh/h]	133	468	2001	13	225	98	225	1771	553	1084	2673	834
d1, Uniform Delay [s]	39.08	33.87	14.73	46.96	42.24	42.62	21.31	24.08	24.32	13.18	22.20	11.08
k, delay calibration	0.20	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	32.41	1.07	0.06	86.69	0.30	1.66	0.69	0.18	0.64	1.36	4.82	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.56	0.22	0.88	0.15	0.30	0.28	0.45	0.48	0.79	0.98	0.05
d, Delay for Lane Group [s/veh]	71.49	34.93	14.79	133.65	42.54	44.29	22.00	24.27	24.96	14.54	27.02	11.10
Lane Group LOS	E	C	B	F	D	D	C	C	C	B	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.89	2.71	1.77	0.57	0.38	0.71	0.26	4.60	4.64	4.70	18.64	0.44
50th-Percentile Queue Length [ft/ln]	97.34	67.64	44.19	14.13	9.54	17.65	6.61	114.97	116.09	117.58	465.99	11.11
95th-Percentile Queue Length [veh/ln]	7.01	4.87	3.18	1.02	0.69	1.27	0.48	8.12	8.18	8.26	25.72	0.80
95th-Percentile Queue Length [ft/ln]	175.20	121.76	79.54	25.43	17.18	31.76	11.89	202.89	204.44	206.50	643.01	20.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.49	34.93	14.79	133.65	42.54	44.29	22.00	24.27	24.96	14.54	27.02	11.10
Movement LOS	E	C	B	F	D	D	C	C	C	B	C	B
d_A, Approach Delay [s/veh]	29.51			56.96			24.30			23.78		
Approach LOS	C			E			C			C		
d_I, Intersection Delay [s/veh]	25.17											
Intersection LOS	C											
Intersection V/C	0.807											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.06	0.00	39.06	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.532	0.000	3.178	0.000
Crosswalk LOS	D	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	789	649	3128	1910
d_b, Bicycle Delay [s]	17.45	21.75	15.15	0.10
l_b,int, Bicycle LOS Score for Intersection	2.245	1.620	2.182	3.499
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	61.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.906

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	116	767	74	495	785	19	59	16	79	16	6	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	767	74	495	785	19	59	16	79	16	6	155
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	196	19	127	201	5	15	4	20	4	2	40
Total Analysis Volume [veh/h]	119	786	76	507	804	19	60	16	81	16	6	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing m	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	90	73	73	90	78	78	33	33	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.60	0.60	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.18	0.52	0.53	0.38	0.42	0.42	0.05	0.14	0.01	0.20
s, saturation flow rate [veh/h]	680	837	807	1341	984	972	1176	711	1283	824
c, Capacity [veh/h]	349	471	454	417	592	585	109	179	187	208
d1, Uniform Delay [s]	13.63	26.07	26.22	28.50	17.75	17.81	62.26	42.16	51.31	45.33
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.06	0.11	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	27.28	28.72	116.68	6.67	6.86	4.23	1.42	0.20	15.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.93	0.93	1.21	0.70	0.70	0.55	0.54	0.09	0.79
d, Delay for Lane Group [s/veh]	16.28	53.35	54.94	145.18	24.42	24.68	66.49	43.58	51.51	61.27
Lane Group LOS	B	D	D	F	C	C	E	D	D	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.34	15.02	14.78	8.99	9.30	9.29	2.13	2.81	0.40	5.93
50th-Percentile Queue Length [ft/ln]	33.52	375.38	369.53	224.70	232.41	232.18	53.37	70.14	10.12	148.36
95th-Percentile Queue Length [veh/ln]	2.41	21.37	21.09	15.78	14.30	14.29	3.84	5.05	0.73	9.93
95th-Percentile Queue Length [ft/ln]	60.34	534.26	527.16	394.53	357.42	357.13	96.07	126.25	18.21	248.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.28	54.06	54.94	145.18	24.54	24.68	66.49	43.58	43.58	51.51	61.27	61.27
Movement LOS	B	D	D	F	C	C	E	D	D	D	E	E
d_A, Approach Delay [s/veh]	49.54			70.53			52.34			60.41		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	60.99											
Intersection LOS	E											
Intersection V/C	0.906											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.29	56.29	54.44	54.44
l_p,int, Pedestrian LOS Score for Intersectio	2.902	3.023	2.144	2.724
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1124	1077	505	508
d_b, Bicycle Delay [s]	12.57	14.10	36.40	36.36
l_b,int, Bicycle LOS Score for Intersection	2.369	2.657	1.819	1.858
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	83.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	155	677	920	82	174	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	677	920	82	174	83
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	175	238	21	45	21
Total Analysis Volume [veh/h]	160	700	951	85	180	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing m	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	130	130	130	30	30
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	130	114	114	30	30
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	133	117	117	20	20
g / C, Green / Cycle	0.08	0.83	0.73	0.73	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.20	0.44	0.62	0.64	0.11	0.11
s, saturation flow rate [veh/h]	797	1593	837	809	1705	803
c, Capacity [veh/h]	65	1321	610	590	217	102
d1, Uniform Delay [s]	73.59	4.17	15.46	16.36	68.24	68.11
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.09
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	702.33	1.53	13.83	16.81	6.16	13.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.46	0.53	0.85	0.88	0.83	0.84
d, Delay for Lane Group [s/veh]	775.92	5.70	29.30	33.16	74.40	82.07
Lane Group LOS	F	A	C	C	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	15.32	2.93	14.18	15.27	7.61	3.85
50th-Percentile Queue Length [ft/ln]	383.10	73.31	354.49	381.84	190.15	96.16
95th-Percentile Queue Length [veh/ln]	26.03	5.28	20.36	21.68	12.13	6.92
95th-Percentile Queue Length [ft/ln]	650.65	131.96	508.88	542.07	303.22	173.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	775.92	5.70	31.06	33.16	74.40	82.07
Movement LOS	F	A	C	C	E	F
d_A, Approach Delay [s/veh]	149.00		31.23		76.88	
Approach LOS	F		C		E	
d_I, Intersection Delay [s/veh]	83.69					
Intersection LOS	F					
Intersection V/C	1.004					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.31	71.31	69.44
l_p,int, Pedestrian LOS Score for Intersectio	2.821	2.782	2.134
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1574	1374	337
d_b, Bicycle Delay [s]	3.65	7.85	55.36
l_b,int, Bicycle LOS Score for Intersection	2.269	2.414	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	55.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.971

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	776	949	94	1012	525	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	776	949	94	1012	525	80
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	204	249	25	266	138	21
Total Analysis Volume [veh/h]	816	998	99	1064	552	84
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	135	135	21	135	30	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	115	115	15	130	30	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	112	112	11	126	27	27
g / C, Green / Cycle	0.70	0.70	0.07	0.79	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.51	0.66	0.06	0.67	0.20	0.20
s, saturation flow rate [veh/h]	1593	1516	1781	1593	1406	1731
c, Capacity [veh/h]	1117	1064	120	1255	235	290
d1, Uniform Delay [s]	14.64	19.19	73.79	10.88	66.73	66.73
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.22	16.24	5.26	7.24	127.11	123.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.94	0.82	0.85	1.21	1.21
d, Delay for Lane Group [s/veh]	18.86	35.43	79.05	18.12	193.84	189.98
Lane Group LOS	B	D	E	B	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.96	31.43	4.18	11.05	17.96	21.80
50th-Percentile Queue Length [ft/ln]	224.02	785.69	104.40	276.31	449.00	545.04
95th-Percentile Queue Length [veh/ln]	13.87	40.62	7.52	16.50	27.21	32.29
95th-Percentile Queue Length [ft/ln]	346.75	1015.54	187.91	412.61	680.37	807.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.86	35.43	79.05	18.12	192.00	189.98
Movement LOS	B	D	E	B	F	F
d_A, Approach Delay [s/veh]	27.98		23.30		191.71	
Approach LOS	C		C		F	
d_I, Intersection Delay [s/veh]	55.29					
Intersection LOS	E					
Intersection V/C	0.971					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.531
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1386	1574	335
d_b, Bicycle Delay [s]	7.59	3.64	55.54
l_b,int, Bicycle LOS Score for Intersection	3.056	2.519	2.609
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	329.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.432

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	175	1213	450	66	1399	20	22	126	390	403	132	221
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	1213	450	66	1399	20	22	126	390	403	132	221
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	329	122	18	379	5	6	34	106	109	36	60
Total Analysis Volume [veh/h]	190	1316	488	72	1517	22	24	137	423	437	143	240
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	80	80	21	80	80	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	31	31	39	59	59	10	29	29	31	50	50
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	20	20	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	8	34	34	7	33	33	3	36	36	38	70	70
g / C, Green / Cycle	0.06	0.26	0.26	0.05	0.25	0.25	0.02	0.28	0.28	0.29	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.36	0.04	0.64	0.64	0.02	0.09	0.27	0.28	0.17	0.35
s, saturation flow rate [veh/h]	1781	3560	1580	1781	1593	829	1528	1604	1539	1547	837	690
c, Capacity [veh/h]	110	942	418	91	405	211	34	441	423	455	451	372
d1, Uniform Delay [s]	61.00	47.81	47.81	60.97	48.48	48.48	63.13	37.34	46.54	45.18	16.67	20.86
k, delay calibration	0.16	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.16	0.04	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	342.12	146.26	181.03	5.57	681.58	690.03	23.19	0.15	24.85	5.89	0.40	6.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.73	1.31	1.37	0.79	2.50	2.50	0.70	0.31	1.00	0.96	0.32	0.65
d, Delay for Lane Group [s/veh]	403.12	194.06	228.84	66.54	730.06	738.51	86.31	37.49	71.39	51.07	17.07	27.80
Lane Group LOS	F	F	F	E	F	F	F	D	E	D	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.98	34.03	34.24	2.51	44.93	47.28	1.01	3.50	16.31	7.26	2.41	5.68
50th-Percentile Queue Length [ft/ln]	349.58	850.85	855.97	62.81	1123.36	1181.91	25.25	87.45	407.83	181.49	60.36	142.05
95th-Percentile Queue Length [veh/ln]	23.01	50.40	51.61	4.52	74.24	77.83	1.82	6.30	22.94	11.68	4.35	9.59
95th-Percentile Queue Length [ft/ln]	575.31	1260.11	1290.34	113.06	1856.06	1945.77	45.45	157.41	573.43	291.95	108.65	239.79

Movement, Approach, & Intersection Results

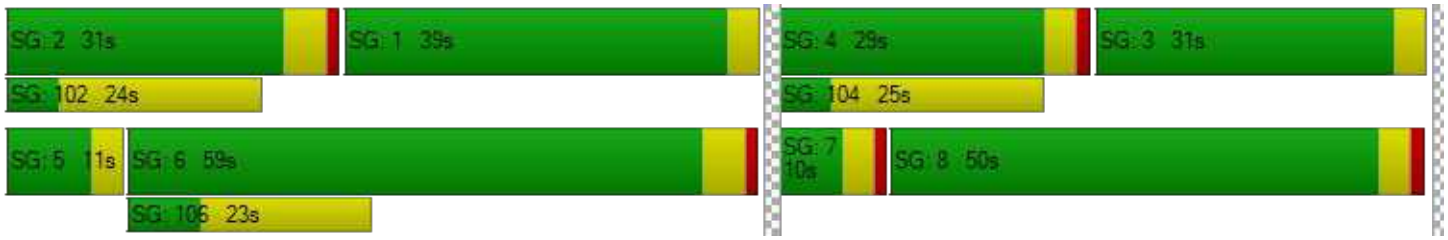
d_M, Delay for Movement [s/veh]	403.12	196.29	228.84	66.54	732.87	738.51	86.31	37.49	71.39	51.07	17.07	27.80
Movement LOS	F	F	F	E	F	F	F	D	E	D	B	C
d_A, Approach Delay [s/veh]	223.96			703.17			64.05			38.33		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	329.05											
Intersection LOS	F											
Intersection V/C	1.432											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	46.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	27.14	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.425	2.954	2.378	2.615
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	831	385	708
d_b, Bicycle Delay [s]	41.64	22.23	42.51	27.33
l_b,int, Bicycle LOS Score for Intersection	2.656	2.446	2.523	2.913
Bicycle LOS	B	B	B	C

Sequence

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	113.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.338

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	105	1299	994	734	415	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	1299	994	734	415	56
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	343	262	194	109	15
Total Analysis Volume [veh/h]	111	1370	1049	774	438	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		2		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	12	60	48	48	20	20
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	9	49	36	36	36	36
g / C, Green / Cycle	0.10	0.52	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.08	0.52	0.38	0.63	0.47	0.04
s, saturation flow rate [veh/h]	1312	2623	2792	1227	937	1569
c, Capacity [veh/h]	129	1356	1065	468	356	597
d1, Uniform Delay [s]	41.89	22.80	28.94	28.82	29.26	18.83
k, delay calibration	0.04	0.24	0.15	0.50	0.50	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	19.41	12.24	303.68	125.33	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	1.01	0.99	1.65	1.23	0.10
d, Delay for Lane Group [s/veh]	48.01	42.20	41.18	332.50	154.58	18.86
Lane Group LOS	D	F	D	F	F	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.74	17.41	12.85	49.28	20.10	0.82
50th-Percentile Queue Length [ft/ln]	68.46	435.31	321.17	1232.04	502.49	20.60
95th-Percentile Queue Length [veh/ln]	4.93	24.44	18.72	78.46	31.08	1.48
95th-Percentile Queue Length [ft/ln]	123.23	611.08	468.12	1961.56	776.98	37.08

Movement, Approach, & Intersection Results

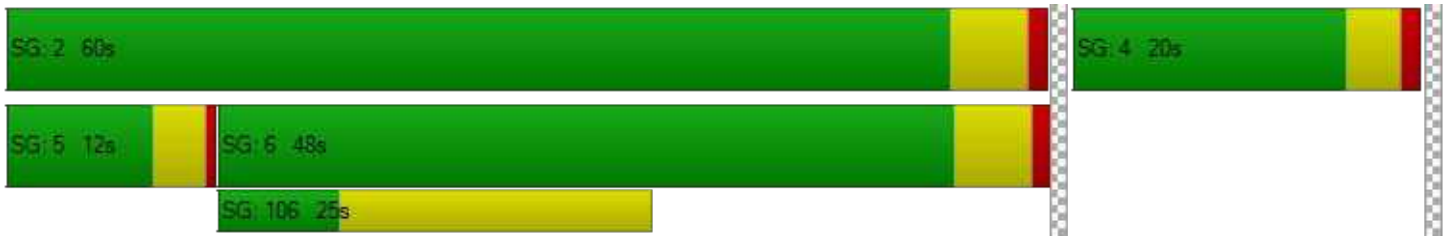
d_M, Delay for Movement [s/veh]	48.01	42.20	41.18	332.50	154.58	18.86
Movement LOS	D	F	D	F	F	B
d_A, Approach Delay [s/veh]	42.64		164.87		138.47	
Approach LOS	D		F		F	
d_I, Intersection Delay [s/veh]	113.79					
Intersection LOS	F					
Intersection V/C	1.338					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	36.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.391
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1154	900	334
d_b, Bicycle Delay [s]	8.51	14.32	32.78
l_b,int, Bicycle LOS Score for Intersection	2.781	3.064	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	88.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	19	792	8	36	798	46	41	10	16	78	6	344
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	792	8	36	798	46	41	10	16	78	6	344
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	205	2	9	206	12	11	3	4	20	2	89
Total Analysis Volume [veh/h]	20	819	8	37	825	48	42	10	17	81	6	356
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing m	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			4			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	154	154	154	154	154	154	154	154	154	154
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	3	88	88	6	91	12	12	12	30	30
g / C, Green / Cycle	0.02	0.57	0.57	0.04	0.59	0.08	0.08	0.08	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.25	0.04	0.57	0.02	0.02	0.01	0.09	0.31
s, saturation flow rate [veh/h]	937	1422	1863	937	1528	937	1376	1323	937	1182
c, Capacity [veh/h]	17	812	1064	39	908	71	104	100	183	230
d1, Uniform Delay [s]	75.54	18.94	18.94	73.55	29.56	67.34	67.32	66.53	54.62	61.97
k, delay calibration	0.11	0.23	0.23	0.11	0.42	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	146.33	0.81	0.62	52.63	19.67	2.35	1.58	0.80	1.69	277.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.44	0.44	0.94	0.96	0.30	0.30	0.17	0.44	1.57
d, Delay for Lane Group [s/veh]	221.88	19.74	19.56	126.18	49.23	69.69	68.90	67.33	56.30	339.28
Lane Group LOS	F	B	B	F	D	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.40	7.68	10.02	2.05	34.87	0.86	1.23	0.67	2.90	26.82
50th-Percentile Queue Length [ft/ln]	35.09	192.04	250.43	51.25	871.63	21.52	30.68	16.68	72.50	670.46
95th-Percentile Queue Length [veh/ln]	2.53	12.23	15.21	3.69	44.55	1.55	2.21	1.20	5.22	42.51
95th-Percentile Queue Length [ft/ln]	63.16	305.68	380.20	92.25	1113.72	38.73	55.23	30.02	130.49	1062.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	221.88	19.64	19.56	126.18	49.23	49.23	69.32	68.90	67.33	56.30	339.28	339.28
Movement LOS	F	B	B	F	D	D	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	24.41			52.36			68.76			287.54		
Approach LOS	C			D			E			F		
d_I, Intersection Delay [s/veh]	88.34											
Intersection LOS	F											
Intersection V/C	0.966											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.31	66.31	66.31	66.31
l_p,int, Pedestrian LOS Score for Intersectio	2.516	2.766	2.168	2.101
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	260	260	390	390
d_b, Bicycle Delay [s]	58.31	58.34	49.87	49.87
l_b,int, Bicycle LOS Score for Intersection	2.258	3.061	1.673	2.291
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	34	648	4	5	693	184	252	3	46	3	7	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	648	4	5	693	184	252	3	46	3	7	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	171	1	1	182	48	66	1	12	1	2	1
Total Analysis Volume [veh/h]	36	682	4	5	729	194	265	3	48	3	7	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing m	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			59			13			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	94	94	94	94	94	94	36	36	36	0	36	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	90	90	90	90	32	32
g / C, Green / Cycle	0.69	0.69	0.69	0.69	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.06	0.37	0.01	0.52	0.23	0.01
s, saturation flow rate [veh/h]	606	1868	756	1779	1364	1777
c, Capacity [veh/h]	269	1297	436	1236	381	464
d1, Uniform Delay [s]	28.86	9.57	16.14	12.58	48.15	37.59
k, delay calibration	0.50	0.50	0.50	0.50	0.41	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.03	1.55	0.05	4.15	15.54	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.53	0.01	0.75	0.83	0.03
d, Delay for Lane Group [s/veh]	29.88	11.11	16.18	16.73	63.69	37.62
Lane Group LOS	C	B	B	B	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.87	9.64	0.08	17.07	11.68	0.35
50th-Percentile Queue Length [ft/ln]	21.72	241.10	2.04	426.72	292.12	8.79
95th-Percentile Queue Length [veh/ln]	1.56	14.74	0.15	23.84	17.29	0.63
95th-Percentile Queue Length [ft/ln]	39.09	368.42	3.67	596.11	432.27	15.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.88	11.11	11.11	16.18	16.73	16.73	63.69	63.69	63.69	37.62	37.62	37.62
Movement LOS	C	B	B	B	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	12.05			16.73			63.69			37.62		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	22.66											
Intersection LOS	C											
Intersection V/C	0.793											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.43	54.43	54.43	54.43
l_p,int, Pedestrian LOS Score for Intersectio	2.369	2.945	2.053	1.750
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1384	1384	491	491
d_b, Bicycle Delay [s]	6.19	6.35	37.22	37.11
l_b,int, Bicycle LOS Score for Intersection	2.751	3.091	2.081	1.583
Bicycle LOS	C	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.595

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	4	514	160	35	708	1	49	98	12	152	112	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	514	160	35	708	1	49	98	12	152	112	114
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	137	43	9	189	0	13	26	3	41	30	30
Total Analysis Volume [veh/h]	4	549	171	37	756	1	52	105	13	162	120	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing m	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			32			7			13		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	64	64	64	64	64	64	26	26	26	0	26	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	61	61	61	61	20	20	20	20
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.01	0.41	0.05	0.40	0.05	0.06	0.13	0.14
s, saturation flow rate [veh/h]	707	1777	732	1869	1133	1820	1250	1685
c, Capacity [veh/h]	388	1211	401	1274	174	414	275	384
d1, Uniform Delay [s]	14.45	7.69	14.99	7.69	39.74	28.75	36.87	31.39
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	2.16	0.46	2.05	0.95	0.37	2.00	1.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.59	0.09	0.59	0.30	0.28	0.59	0.63
d, Delay for Lane Group [s/veh]	14.50	9.85	15.45	9.74	40.69	29.12	38.88	33.10
Lane Group LOS	B	A	B	A	D	C	D	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.05	7.15	0.50	7.48	1.15	2.15	3.59	4.89
50th-Percentile Queue Length [ft/ln]	1.28	178.72	12.38	186.89	28.81	53.67	89.75	122.35
95th-Percentile Queue Length [veh/ln]	0.09	11.53	0.89	11.96	2.07	3.86	6.46	8.52
95th-Percentile Queue Length [ft/ln]	2.31	288.34	22.28	298.99	51.86	96.61	161.55	213.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.50	9.85	9.85	15.45	9.74	9.74	40.69	29.12	29.12	38.88	33.10	33.10
Movement LOS	B	A	A	B	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.88			10.00			32.66			35.42		
Approach LOS	A			B			C			D		
d_I, Intersection Delay [s/veh]	16.71											
Intersection LOS	B											
Intersection V/C	0.595											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.71	34.71	34.71	34.71
l_p,int, Pedestrian LOS Score for Intersectio	2.618	2.513	2.025	2.187
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1330	1330	486	486
d_b, Bicycle Delay [s]	5.12	5.13	25.89	25.97
l_b,int, Bicycle LOS Score for Intersection	2.754	2.870	1.840	2.226
Bicycle LOS	C	C	A	B

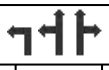
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	58.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	35	273	127	356	183	460	165	436	144	355	279	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	35	273	127	356	183	460	165	436	144	355	279	24
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	71	33	93	48	120	43	114	38	92	73	6
Total Analysis Volume [veh/h]	36	284	132	371	191	479	172	454	150	370	291	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10			2			10			2		
v_di, Inbound Pedestrian Volume crossing m	10			2			10			2		
v_co, Outbound Pedestrian Volume crossing	5			3			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			3			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	17			17			6			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	61	61	61	21	21	21	21	23	23	23
g / C, Green / Cycle	0.17	0.17	0.17	0.41	0.41	0.41	0.14	0.14	0.14	0.14	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.09	0.16	0.15	0.31	0.10	0.12	0.12	0.10	0.13	0.13	0.13
s, saturation flow rate [veh/h]	1781	1870	1483	1781	1841	1556	1781	1870	1870	1533	1781	1813	1818
c, Capacity [veh/h]	307	322	256	727	752	635	254	267	267	219	274	279	280
d1, Uniform Delay [s]	52.38	60.51	55.97	31.14	30.95	37.53	60.97	62.69	62.69	60.82	61.45	61.43	61.50
k, delay calibration	0.11	0.29	0.11	0.50	0.50	0.50	0.11	0.19	0.19	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	18.01	1.61	1.55	1.42	8.09	3.14	12.44	12.44	3.78	6.14	6.00	6.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.88	0.52	0.39	0.37	0.75	0.68	0.85	0.85	0.69	0.82	0.82	0.83
d, Delay for Lane Group [s/veh]	52.55	78.53	57.58	32.69	32.37	45.62	64.11	75.13	75.13	64.60	67.59	67.43	67.73
Lane Group LOS	D	E	E	C	C	D	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.17	12.19	4.66	7.66	7.60	16.52	6.47	9.40	9.40	5.66	8.81	8.95	9.07
50th-Percentile Queue Length [ft/ln]	29.36	304.63	116.48	191.42	189.91	412.95	161.7	234.9	234.9	141.6	220.35	223.65	226.76
95th-Percentile Queue Length [veh/ln]	2.11	17.91	8.20	12.19	12.12	23.18	10.64	14.43	14.43	9.57	13.68	13.85	14.01
95th-Percentile Queue Length [ft/ln]	52.85	447.76	204.98	304.87	302.91	579.58	265.9	360.6	360.6	239.1	342.08	346.28	350.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.55	78.53	57.58	32.61	32.37	45.62	64.11	75.13	64.60	67.53	67.64	67.73
Movement LOS	D	E	E	C	C	D	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	70.34			38.55			70.65			67.58		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	58.58											
Intersection LOS	E											
Intersection V/C	0.748											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersectio	2.360	2.786	4.317	2.646
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.43	39.69	50.30	44.75
l_b,int, Bicycle LOS Score for Intersection	2.305	3.277	3.025	2.126
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	52.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	422	51	20	498	60	173	188	20	138	247	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	422	51	20	498	60	173	188	20	138	247	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	117	14	6	138	17	48	52	6	38	69	15
Total Analysis Volume [veh/h]	23	469	57	22	553	67	192	209	22	153	274	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			19			18			18		
v_di, Inbound Pedestrian Volume crossing m	18			18			19			18		
v_co, Outbound Pedestrian Volume crossing	25			20			26			21		
v_ci, Inbound Pedestrian Volume crossing mi	26			21			25			20		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	52			17			11			37		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	4	4	5	5	5	4	4	4	4	4	4
Maximum Green [s]	20	71	71	20	71	71	30	26	30	26	30	26
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	44	44	10	44	44	28	28	28	28	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	149	149	149	149	149	149	149	149
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.70	0.00	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	79	71	79	71	26	26	30	30
g / C, Green / Cycle	0.53	0.48	0.53	0.48	0.17	0.17	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.03	0.29	0.02	0.34	0.11	0.13	0.09	0.19
s, saturation flow rate [veh/h]	877	1807	943	1817	1781	1805	1781	1738
c, Capacity [veh/h]	316	862	381	866	311	315	359	350
d1, Uniform Delay [s]	22.49	28.74	20.32	31.00	56.91	58.22	51.99	58.87
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.45	3.21	0.06	5.05	8.90	14.06	3.68	38.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.61	0.06	0.72	0.62	0.73	0.43	0.96
d, Delay for Lane Group [s/veh]	22.94	31.96	20.38	36.05	65.81	72.28	55.67	97.31
Lane Group LOS	C	C	C	D	E	E	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.43	14.68	0.38	18.88	7.50	9.51	5.45	16.34
50th-Percentile Queue Length [ft/ln]	10.64	366.91	9.40	471.91	187.42	237.81	136.30	408.60
95th-Percentile Queue Length [veh/ln]	0.77	20.96	0.68	26.00	11.99	14.57	9.28	22.97
95th-Percentile Queue Length [ft/ln]	19.16	523.98	16.93	650.05	299.68	364.26	232.03	574.35

Movement, Approach, & Intersection Results

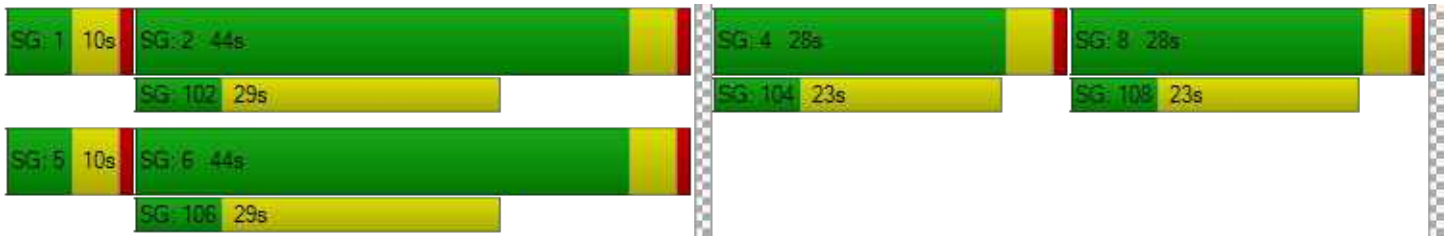
d_M, Delay for Movement [s/veh]	22.94	31.96	31.96	20.38	36.05	36.05	65.81	72.28	72.28	55.67	97.31	97.31
Movement LOS	C	C	C	C	D	D	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	31.58			35.51			69.34			84.26		
Approach LOS	C			D			E			F		
d_I, Intersection Delay [s/veh]	52.61											
Intersection LOS	D											
Intersection V/C	0.687											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.88	63.88	63.88	63.88
l_p,int, Pedestrian LOS Score for Intersectio	2.405	2.382	2.232	2.193
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	528	313	313
d_b, Bicycle Delay [s]	41.43	40.70	53.28	53.99
l_b,int, Bicycle LOS Score for Intersection	2.465	2.619	2.258	2.365
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	41.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	50	281	97	13	341	72	114	197	7	94	243	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	281	97	13	341	72	114	197	7	94	243	49
Peak Hour Factor	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390	0.8390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	84	29	4	102	21	34	59	2	28	72	15
Total Analysis Volume [veh/h]	60	335	116	15	406	86	136	235	8	112	290	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	13			32			14			33		
v_di, Inbound Pedestrian Volume crossing m	14			33			13			32		
v_co, Outbound Pedestrian Volume crossing	12			26			25			12		
v_ci, Inbound Pedestrian Volume crossing mi	12			25			26			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			39			21			32		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	87	87	87	87
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	30	30	20	24
g / C, Green / Cycle	0.34	0.34	0.23	0.28
(v / s)_i Volume / Saturation Flow Rate	0.35	0.29	0.21	0.25
s, saturation flow rate [veh/h]	1472	1758	1830	1808
c, Capacity [veh/h]	553	647	430	504
d1, Uniform Delay [s]	28.18	26.37	32.19	30.41
k, delay calibration	0.45	0.33	0.16	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.01	6.20	8.51	13.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.78	0.88	0.91
d, Delay for Lane Group [s/veh]	50.19	32.58	40.70	43.72
Lane Group LOS	D	C	D	D
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	13.76	10.51	8.59	10.85
50th-Percentile Queue Length [ft/ln]	344.01	262.80	214.80	271.17
95th-Percentile Queue Length [veh/ln]	19.84	15.83	13.40	16.25
95th-Percentile Queue Length [ft/ln]	496.10	395.73	334.98	406.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.19	50.19	50.19	32.58	32.58	32.58	40.70	40.70	40.70	43.72	43.72	43.72
Movement LOS	D	D	D	C	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	50.19			32.58			40.70			43.72		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	41.84											
Intersection LOS	D											
Intersection V/C	0.848											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.21	34.98	33.21	33.21
l_p,int, Pedestrian LOS Score for Intersectio	2.164	2.106	2.059	2.208
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	689	689
d_b, Bicycle Delay [s]	18.95	19.06	18.88	18.99
l_b,int, Bicycle LOS Score for Intersection	2.403	2.396	2.185	2.319
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	77.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.334

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	4	16	8	118	10	393	19	976	126	344	1509	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	8	118	10	393	19	976	126	344	1509	26
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	31	3	103	5	255	33	90	395	7
Total Analysis Volume [veh/h]	4	17	8	123	10	411	20	1021	132	360	1578	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	40	0	0	40	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	40	0	0	40	0	15	85	0	25	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	34	34	34	34	6	78	78	22	94	94
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.04	0.52	0.52	0.15	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	3.73	0.26	0.01	0.29	0.08	0.20	0.30	0.30
s, saturation flow rate [veh/h]	465	1589	36	1564	1781	3560	1555	1781	3560	1851
c, Capacity [veh/h]	134	361	54	355	67	1850	808	261	2239	1164
d1, Uniform Delay [s]	47.52	45.04	73.66	57.69	69.29	14.34	11.72	60.30	5.46	5.46
k, delay calibration	0.11	0.11	0.50	0.42	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.02	703.97	94.60	2.44	1.19	0.43	192.00	0.71	1.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.02	2.45	1.16	0.30	0.55	0.16	1.38	0.47	0.47
d, Delay for Lane Group [s/veh]	48.06	45.06	777.64	152.30	71.73	15.53	12.15	252.29	6.17	6.84
Lane Group LOS	D	D	F	F	E	B	B	F	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.66	0.24	12.73	22.72	0.79	7.69	1.62	23.58	3.54	3.90
50th-Percentile Queue Length [ft/ln]	16.43	6.09	318.13	568.03	19.70	192.35	40.57	589.51	88.42	97.54
95th-Percentile Queue Length [veh/ln]	1.18	0.44	22.91	33.09	1.42	12.24	2.92	36.02	6.37	7.02
95th-Percentile Queue Length [ft/ln]	29.58	10.97	572.63	827.29	35.46	306.07	73.02	900.61	159.15	175.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.06	48.06	45.06	777.64	777.64	152.30	71.73	15.53	12.15	252.29	6.39	6.84
Movement LOS	D	D	D	F	F	F	E	B	B	F	A	A
d_A, Approach Delay [s/veh]	47.23			305.18			16.11			51.45		
Approach LOS	D			F			B			D		
d_I, Intersection Delay [s/veh]	77.44											
Intersection LOS	E											
Intersection V/C	4.334											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.39	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.978	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1040	1174
d_b, Bicycle Delay [s]	44.84	44.93	17.29	12.83
l_b,int, Bicycle LOS Score for Intersection	1.607	2.457	2.527	2.640
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	334	198	92	68	309	38	112	860	43	89	1016	246
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	198	92	68	309	38	112	860	43	89	1016	246
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	53	25	18	83	10	30	231	12	24	273	66
Total Analysis Volume [veh/h]	359	213	99	73	332	41	120	925	46	96	1092	265
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			2			5			3		
v_di, Inbound Pedestrian Volume crossing m	5			3			5			2		
v_co, Outbound Pedestrian Volume crossing	2			6			6			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			6			6			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	18			15			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	32	0	0	32	0	15	71	0	15	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	28	28	28	29	29	29	12	68	68	10	66	66
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.19	0.08	0.45	0.45	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.07	0.04	0.18	0.03	0.07	0.26	0.03	0.05	0.31	0.17
s, saturation flow rate [veh/h]	1781	1845	1513	1781	1870	1531	1781	3560	1532	1781	3560	1539
c, Capacity [veh/h]	337	349	286	338	355	291	137	1617	696	117	1579	682
d1, Uniform Delay [s]	58.59	58.53	52.60	51.32	59.84	50.52	66.64	20.80	16.51	67.62	23.58	19.76
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.48	5.16	0.72	0.32	12.35	0.22	15.84	1.48	0.18	13.33	2.51	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.83	0.35	0.22	0.93	0.14	0.88	0.57	0.07	0.82	0.69	0.39
d, Delay for Lane Group [s/veh]	64.06	63.69	53.31	51.63	72.19	50.74	82.49	22.28	16.70	80.95	26.09	21.42
Lane Group LOS	E	E	D	D	E	D	F	C	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.85	11.14	3.32	2.40	13.77	1.33	5.02	9.04	0.70	4.00	12.75	4.83
50th-Percentile Queue Length [ft/ln]	271.15	278.61	82.95	59.92	344.27	33.16	125.43	226.12	17.58	100.03	318.80	120.64
95th-Percentile Queue Length [veh/ln]	16.25	16.62	5.97	4.31	19.86	2.39	8.69	13.98	1.27	7.20	18.61	8.43
95th-Percentile Queue Length [ft/ln]	406.17	415.48	149.32	107.85	496.42	59.69	217.27	349.42	31.64	180.05	465.21	210.71

Movement, Approach, & Intersection Results

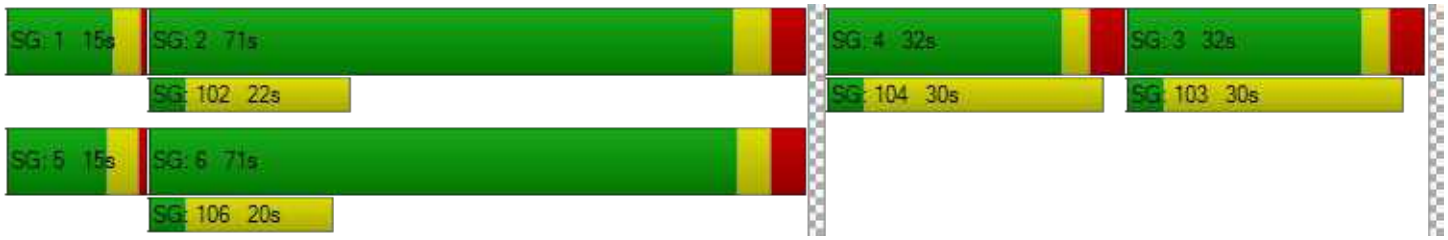
d_M, Delay for Movement [s/veh]	63.99	63.69	53.31	51.63	72.19	50.74	82.49	22.28	16.70	80.95	26.09	21.42
Movement LOS	E	E	D	D	E	D	F	C	B	F	C	C
d_A, Approach Delay [s/veh]	62.32			66.85			28.67			28.86		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	39.56											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	67.22	67.22
l_p,int, Pedestrian LOS Score for Intersectio	2.495	2.320	2.925	2.930
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	340	851	845
d_b, Bicycle Delay [s]	52.15	52.07	24.83	25.12
l_b,int, Bicycle LOS Score for Intersection	2.667	2.296	2.460	2.758
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	97	285	59	94	352	65	108	863	148	124	897	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	285	59	94	352	65	108	863	148	124	897	98
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	77	16	25	95	17	29	232	40	33	241	26
Total Analysis Volume [veh/h]	104	306	63	101	378	70	116	928	159	133	965	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	19			38			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	130.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	28	35	0	28	35	0	12	67	0	20	75	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	40	40	10	35	35	8	69	69	13	74	74
g / C, Green / Cycle	0.10	0.27	0.27	0.07	0.23	0.23	0.05	0.46	0.46	0.09	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.04	0.06	0.20	0.05	0.07	0.26	0.10	0.07	0.27	0.07
s, saturation flow rate [veh/h]	1781	1870	1545	1781	1870	1513	1781	3560	1589	1781	3560	1543
c, Capacity [veh/h]	186	498	411	125	434	351	97	1642	733	156	1761	763
d1, Uniform Delay [s]	63.97	48.38	42.13	68.83	55.56	46.37	68.34	11.24	9.86	65.37	16.63	13.57
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	1.24	0.17	11.33	8.31	0.28	109.38	1.42	0.68	11.97	1.23	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.61	0.15	0.81	0.87	0.20	1.20	0.57	0.22	0.85	0.55	0.14
d, Delay for Lane Group [s/veh]	66.56	49.62	42.30	80.17	63.87	46.65	177.72	12.65	10.54	77.34	17.86	13.94
Lane Group LOS	E	D	D	F	E	D	F	B	B	E	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.96	10.38	1.85	4.26	14.92	2.18	6.53	4.71	1.53	5.40	8.12	1.43
50th-Percentile Queue Length [ft/ln]	99.09	259.61	46.27	106.60	373.01	54.46	163.30	117.83	38.36	135.07	202.94	35.64
95th-Percentile Queue Length [veh/ln]	7.13	15.67	3.33	7.65	21.26	3.92	11.28	8.27	2.76	9.21	12.79	2.57
95th-Percentile Queue Length [ft/ln]	178.37	391.73	83.28	191.26	531.38	98.02	281.89	206.83	69.05	230.37	319.75	64.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.56	49.62	42.30	80.17	63.87	46.65	177.72	12.65	10.54	77.34	17.86	13.94
Movement LOS	E	D	D	F	E	D	F	B	B	E	B	B
d_A, Approach Delay [s/veh]	52.37			64.67			28.29			24.10		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	35.97											
Intersection LOS	D											
Intersection V/C	0.613											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.28	67.28	67.28	67.28
l_p,int, Pedestrian LOS Score for Intersectio	2.375	2.390	2.858	2.854
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	365	791	898
d_b, Bicycle Delay [s]	50.65	51.14	27.42	22.82
l_b,int, Bicycle LOS Score for Intersection	2.340	2.465	2.552	2.552
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	8.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	25	14	143	57	26	45	0	1000	77	0	1081	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	14	143	57	26	45	0	1000	77	0	1081	65
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	1.0000	0.9130	0.9130	1.0000	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	4	39	16	7	12	0	274	21	0	296	18
Total Analysis Volume [veh/h]	27	15	157	62	28	49	0	1095	84	0	1184	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			8			7			0		
v_di, Inbound Pedestrian Volume crossing m	0			7			8			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			36			2			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	143.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	37	0	0	37	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	20	20	20	13	13	104	104	104	104
g / C, Green / Cycle	0.13	0.13	0.13	0.09	0.09	0.69	0.69	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.10	0.03	0.05	0.31	0.05	0.33	0.05
s, saturation flow rate [veh/h]	1781	1870	1533	1781	1560	3560	1539	3560	1554
c, Capacity [veh/h]	235	247	202	156	136	2466	1066	2466	1077
d1, Uniform Delay [s]	57.43	57.02	62.76	64.75	65.74	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.10	6.30	1.64	3.63	0.58	0.14	0.67	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.06	0.78	0.40	0.56	0.44	0.08	0.48	0.07
d, Delay for Lane Group [s/veh]	57.64	57.12	69.06	66.39	69.37	0.58	0.14	0.67	0.12
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.93	0.51	6.16	2.34	3.00	0.20	0.04	0.23	0.04
50th-Percentile Queue Length [ft/ln]	23.18	12.77	153.92	58.62	75.11	4.98	1.07	5.75	0.88
95th-Percentile Queue Length [veh/ln]	1.67	0.92	10.23	4.22	5.41	0.36	0.08	0.41	0.06
95th-Percentile Queue Length [ft/ln]	41.73	22.98	255.65	105.51	135.20	8.96	1.92	10.36	1.59

Movement, Approach, & Intersection Results

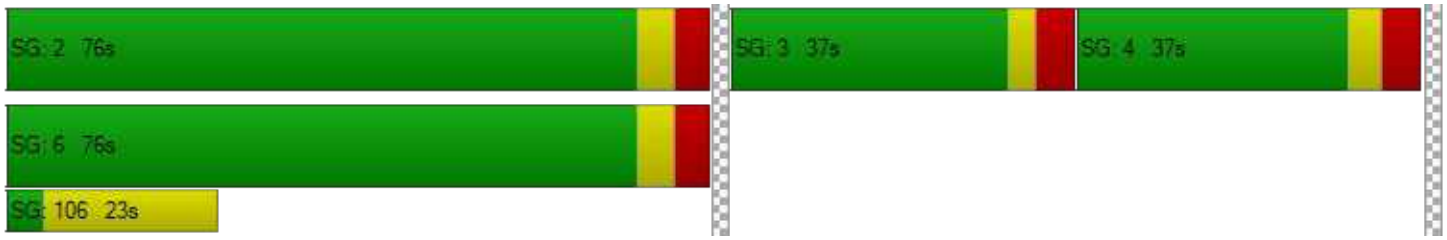
d_M, Delay for Movement [s/veh]	57.64	57.12	69.06	66.39	69.37	69.37	0.00	0.58	0.14	0.00	0.67	0.12
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	66.61			68.04			0.55			0.64		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	8.72											
Intersection LOS	A											
Intersection V/C	0.498											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.031	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	392	912	912
d_b, Bicycle Delay [s]	48.36	49.39	22.23	22.26
l_b,int, Bicycle LOS Score for Intersection	1.888	1.789	2.532	2.595
Bicycle LOS	A	A	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	57.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	438	69	366	270	44	176	1025	406	165	1023	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	438	69	366	270	44	176	1025	406	165	1023	18
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	123	19	103	76	12	50	289	114	46	288	5
Total Analysis Volume [veh/h]	72	493	78	412	304	50	198	1154	457	186	1152	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			10			0			10		
v_di, Inbound Pedestrian Volume crossing m	0			10			0			10		
v_co, Outbound Pedestrian Volume crossing	12			0			0			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			0			0			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	41			11			1			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		No			Yes		No	Yes		No	Yes	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	60	60	24	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.40	0.40	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.12	0.16	0.03	0.11	0.32	0.29	0.10	0.32	0.01
s, saturation flow rate [veh/h]	1850	1756	3459	1870	1503	1781	3560	1570	1781	3560	1512
c, Capacity [veh/h]	296	281	665	360	289	202	1425	628	285	1591	676
d1, Uniform Delay [s]	63.01	63.01	55.54	58.43	50.52	63.51	30.30	28.60	51.30	14.03	10.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	82.22	92.63	4.29	20.96	1.30	58.40	5.08	7.23	11.07	2.90	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.10	1.13	0.62	0.84	0.17	0.98	0.81	0.73	0.65	0.72	0.03
d, Delay for Lane Group [s/veh]	145.23	155.64	59.83	79.39	51.81	121.91	35.39	35.83	62.38	16.93	10.74
Lane Group LOS	F	F	E	E	D	F	D	D	E	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.08	17.98	7.59	13.26	1.69	10.54	16.56	12.61	6.59	7.49	0.20
50th-Percentile Queue Length [ft/ln]	452.01	449.49	189.70	331.46	42.29	263.39	414.07	315.19	164.77	187.30	5.02
95th-Percentile Queue Length [veh/ln]	26.28	26.43	12.11	19.23	3.05	15.86	23.24	18.43	10.80	11.98	0.36
95th-Percentile Queue Length [ft/ln]	656.93	660.78	302.64	480.75	76.13	396.47	580.93	460.77	270.03	299.53	9.04

Movement, Approach, & Intersection Results

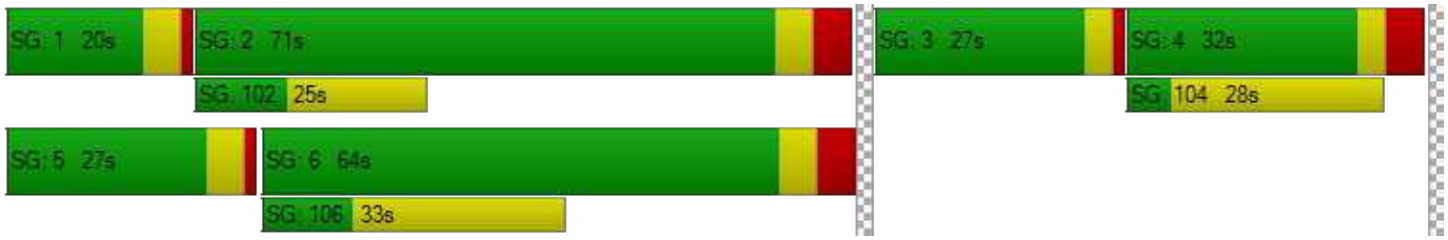
d_M, Delay for Movement [s/veh]	145.23	150.28	155.64	59.83	79.39	51.81	121.91	35.39	35.83	62.38	16.93	10.74
Movement LOS	F	F	F	E	E	D	F	D	D	E	B	B
d_A, Approach Delay [s/veh]	150.37			67.07			44.97			23.07		
Approach LOS	F			E			D			C		
d_I, Intersection Delay [s/veh]	56.98											
Intersection LOS	E											
Intersection V/C	0.799											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.341	2.785	0.000	2.978
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.90	52.38	29.54	25.35
l_b,int, Bicycle LOS Score for Intersection	2.090	2.824	3.052	2.680
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	8.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	64	23	64	6	7	65	40	1309	20	89	1432	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	23	64	6	7	65	40	1309	20	89	1432	35
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9500	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	6	17	2	2	17	11	350	5	24	383	9
Total Analysis Volume [veh/h]	69	25	69	6	7	70	43	1401	21	95	1533	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	6			4			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			4			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			0			3			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	40	40	40	40	40	40	24	86	86	24	86	86
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	22	22	22	8	108	108	10	110	110
g / C, Green / Cycle	0.15	0.15	0.15	0.06	0.72	0.72	0.07	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.04	0.02	0.26	0.26	0.05	0.29	0.29
s, saturation flow rate [veh/h]	1436	1338	1583	1781	3560	1853	1781	3560	1843
c, Capacity [veh/h]	244	231	232	99	2567	1336	116	2601	1346
d1, Uniform Delay [s]	61.87	55.04	57.17	67.17	0.86	0.86	67.59	0.55	0.55
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	0.10	0.73	2.97	0.40	0.77	12.86	0.46	0.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.06	0.30	0.43	0.36	0.36	0.82	0.40	0.40
d, Delay for Lane Group [s/veh]	65.00	55.14	57.90	70.14	1.26	1.63	80.45	1.00	1.43
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.27	0.44	2.49	1.65	0.72	0.89	3.92	0.58	0.76
50th-Percentile Queue Length [ft/ln]	156.76	11.08	62.22	41.16	17.97	22.17	98.09	14.53	19.06
95th-Percentile Queue Length [veh/ln]	10.38	0.80	4.48	2.96	1.29	1.60	7.06	1.05	1.37
95th-Percentile Queue Length [ft/ln]	259.43	19.94	112.00	74.09	32.35	39.90	176.57	26.15	34.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.00	65.00	65.00	55.14	55.14	57.90	70.14	1.38	1.63	80.45	1.14	1.43
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	65.00			57.47			3.40			5.67		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	8.82											
Intersection LOS	A											
Intersection V/C	0.460											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	64.41
l_p,int, Pedestrian LOS Score for Intersectio	1.842	2.003	0.000	3.237
Crosswalk LOS	A	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	1052	1052
d_b, Bicycle Delay [s]	45.22	44.86	16.88	16.89
l_b,int, Bicycle LOS Score for Intersection	1.829	1.697	2.365	2.475
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	166	2	244	0	2	0	285	1181	4	2	1314	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	2	244	0	2	0	285	1181	4	2	1314	100
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	1	64	0	1	0	75	310	1	1	345	26
Total Analysis Volume [veh/h]	175	2	257	0	2	0	300	1242	4	2	1382	105
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			0			3			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	10	0	0	10	0	4	10	0	4	15	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	40	40	0	0	40	0	35	75	0	35	75	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	30	30	30	30	27	110	110	0	83	83
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.18	0.73	0.73	0.00	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.17	0.00	0.00	0.17	0.23	0.23	0.00	0.28	0.28
s, saturation flow rate [veh/h]	1415	1563	1120	1870	1781	3560	1866	1781	3560	1793
c, Capacity [veh/h]	311	310	79	371	322	2603	1365	6	1971	993
d1, Uniform Delay [s]	56.78	57.82	0.00	48.29	56.02	0.52	0.52	74.52	11.03	11.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	5.92	0.00	0.01	11.83	0.32	0.60	28.33	0.91	1.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.84	0.00	0.01	0.93	0.31	0.31	0.33	0.50	0.50
d, Delay for Lane Group [s/veh]	58.38	63.73	0.00	48.30	67.86	0.84	1.13	102.85	11.94	12.88
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.34	9.99	0.00	0.06	11.81	0.43	0.56	0.12	5.60	5.92
50th-Percentile Queue Length [ft/ln]	158.53	249.74	0.00	1.54	295.23	10.64	13.88	3.12	139.89	148.09
95th-Percentile Queue Length [veh/ln]	10.47	15.17	0.00	0.11	17.45	0.77	1.00	0.22	9.48	9.92
95th-Percentile Queue Length [ft/ln]	261.77	379.32	0.00	2.78	436.13	19.16	24.98	5.62	236.88	247.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.38	63.73	63.73	0.00	48.30	48.30	67.86	0.94	1.13	102.85	12.21	12.88
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	61.57			48.30			13.92			12.38		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	19.24											
Intersection LOS	B											
Intersection V/C	0.657											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	67.23	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.970	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	453	453	905	905
d_b, Bicycle Delay [s]	44.98	44.87	22.51	22.53
l_b,int, Bicycle LOS Score for Intersection	2.276	1.563	2.410	2.379
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	5.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.408

Intersection Setup

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	18	1	38	3	0	3	97	1483	3	27	1512	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	6.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	1	38	3	0	3	97	1483	3	27	1512	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	10	1	0	1	26	390	1	7	398	6
Total Analysis Volume [veh/h]	19	1	40	3	0	3	102	1561	3	28	1592	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			5			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	35	0	0	35	0	15	105	0	15	105	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	10	122	122	3	114	114
g / C, Green / Cycle	0.09	0.09	0.09	0.07	0.81	0.81	0.02	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.00	0.06	0.29	0.29	0.02	0.30	0.30
s, saturation flow rate [veh/h]	1514	1589	1362	1781	3560	1868	1781	3560	1855
c, Capacity [veh/h]	182	142	157	123	2885	1513	37	2712	1413
d1, Uniform Delay [s]	62.97	63.84	62.46	67.24	0.00	0.00	72.60	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	1.08	0.10	13.12	0.34	0.65	27.36	0.43	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.28	0.04	0.83	0.36	0.36	0.76	0.39	0.39
d, Delay for Lane Group [s/veh]	63.24	64.92	62.56	80.36	0.34	0.65	99.96	0.43	0.82
Lane Group LOS	E	E	E	F	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.73	1.49	0.22	4.21	0.14	0.28	1.34	0.16	0.32
50th-Percentile Queue Length [ft/ln]	18.20	37.28	5.49	105.22	3.44	6.88	33.59	4.01	8.02
95th-Percentile Queue Length [veh/ln]	1.31	2.68	0.40	7.57	0.25	0.50	2.42	0.29	0.58
95th-Percentile Queue Length [ft/ln]	32.76	67.10	9.88	189.33	6.20	12.39	60.47	7.21	14.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.24	63.24	64.92	62.56	62.56	62.56	80.36	0.45	0.65	99.96	0.56	0.82
Movement LOS	E	E	E	E	E	E	F	A	A	F	A	A
d_A, Approach Delay [s/veh]	64.36			62.56			5.34			2.25		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	4.99											
Intersection LOS	A											
Intersection V/C	0.408											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.22	67.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.016	1.750	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	373	373	1307	1307
d_b, Bicycle Delay [s]	49.62	49.62	9.04	9.04
l_b,int, Bicycle LOS Score for Intersection	1.659	1.570	2.476	2.463
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	378	448	77	286	226	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.93	1.92	2.00	1.94	1.90	1.74
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	448	77	286	226	256
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	120	21	77	60	69
Total Analysis Volume [veh/h]	405	480	82	306	242	274
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		12	
v_di, Inbound Pedestrian Volume crossing m	0		0		11	
v_co, Outbound Pedestrian Volume crossing	11		11		10	
v_ci, Inbound Pedestrian Volume crossing mi	12		10		11	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		91		16	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	14	14	2	20	10	10
g / C, Green / Cycle	0.36	0.36	0.06	0.53	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.22	0.32	0.05	0.16	0.14	0.19
s, saturation flow rate [veh/h]	1871	1514	1781	1871	1782	1462
c, Capacity [veh/h]	679	550	109	992	458	376
d1, Uniform Delay [s]	10.00	11.22	17.82	5.09	12.32	12.86
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	1.76	3.85	0.06	0.35	1.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.87	0.75	0.31	0.53	0.73
d, Delay for Lane Group [s/veh]	10.31	12.98	21.67	5.15	12.68	13.89
Lane Group LOS	B	B	C	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.21	3.12	0.75	0.88	1.52	1.85
50th-Percentile Queue Length [ft/ln]	55.15	78.10	18.76	22.04	38.10	46.37
95th-Percentile Queue Length [veh/ln]	3.97	5.62	1.35	1.59	2.74	3.34
95th-Percentile Queue Length [ft/ln]	99.27	140.58	33.76	39.67	68.57	83.47

Movement, Approach, & Intersection Results

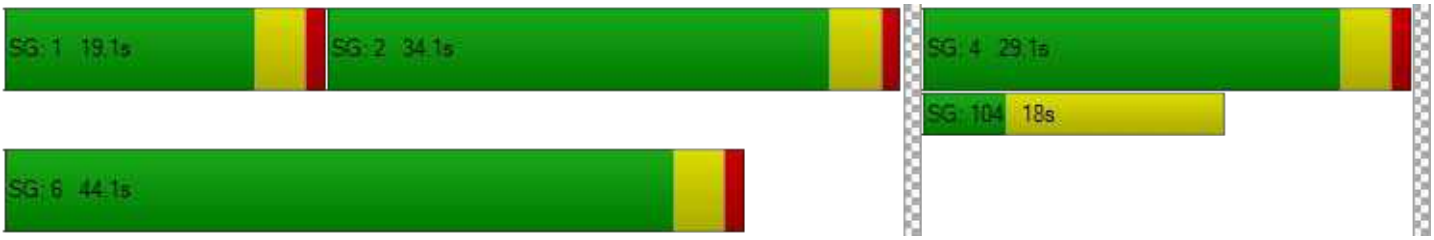
d_M, Delay for Movement [s/veh]	10.31	12.98	21.67	5.15	12.68	13.89
Movement LOS	B	B	C	A	B	B
d_A, Approach Delay [s/veh]	11.76		8.64		13.32	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.53					
Intersection LOS	B					
Intersection V/C	0.614					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	11.28	2.05
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.184	2.118
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1560	2081	1300
d_b, Bicycle Delay [s]	0.93	0.03	2.37
l_b,int, Bicycle LOS Score for Intersection	3.020	2.200	1.560
Bicycle LOS	C	B	A

Sequence

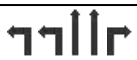
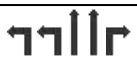
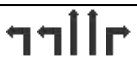
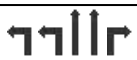
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 39: Santa Cruz Ave/Sand Hill Rd

Control Type:	Signalized	Delay (sec / veh):	47.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	276	958	195	261	546	53	156	757	404	178	547	202
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	276	958	195	261	546	53	156	757	404	178	547	202
Peak Hour Factor	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760	0.9760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	245	50	67	140	14	40	194	103	46	140	52
Total Analysis Volume [veh/h]	283	982	200	267	559	54	160	776	414	182	560	207
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			3			1		
v_di, Inbound Pedestrian Volume crossing m	1			3			4			2		
v_co, Outbound Pedestrian Volume crossing	2			3			3			4		
v_ci, Inbound Pedestrian Volume crossing mi	3			4			2			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	33			33			29			49		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	10
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.6	4.3	4.3	3.6	4.3	4.3	3.6	4.1	4.1	3.6	4.1	4.1
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	19	47	47	20	48	48	13	53	53	20	60	60
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	4.3	4.3	2.6	4.3	4.3	2.6	4.1	4.1	2.6	4.1	4.1
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	6.30	6.30	4.60	6.30	6.30	4.60	6.10	6.10	4.60	6.10	6.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	4.30	4.30	2.60	4.30	4.30	2.60	4.10	4.10	2.60	4.10	4.10
g_i, Effective Green Time [s]	13	55	55	13	55	55	8	40	40	10	42	42
g / C, Green / Cycle	0.10	0.39	0.39	0.09	0.39	0.39	0.06	0.29	0.29	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.28	0.13	0.08	0.16	0.04	0.05	0.22	0.27	0.05	0.16	0.14
s, saturation flow rate [veh/h]	3459	3560	1535	3459	3560	1533	3459	3560	1524	3459	3560	1508
c, Capacity [veh/h]	333	1406	606	320	1393	600	208	1028	440	241	1061	450
d1, Uniform Delay [s]	62.32	35.42	29.34	62.51	30.80	26.88	64.86	45.32	47.93	63.99	40.95	39.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.09	2.90	1.45	5.69	0.86	0.30	5.84	1.15	21.18	4.76	0.41	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.70	0.33	0.83	0.40	0.09	0.77	0.76	0.94	0.75	0.53	0.46
d, Delay for Lane Group [s/veh]	68.41	38.32	30.79	68.20	31.66	27.17	70.71	46.48	69.11	68.75	41.36	40.41
Lane Group LOS	E	D	C	E	C	C	E	D	E	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	14.42	4.92	4.91	6.99	1.20	2.98	12.34	16.33	3.34	8.09	5.85
50th-Percentile Queue Length [ft/ln]	130.55	360.44	122.97	122.79	174.70	29.99	74.39	308.56	408.22	83.45	202.34	146.15
95th-Percentile Queue Length [veh/ln]	8.97	20.64	8.56	8.55	11.32	2.16	5.36	18.10	22.96	6.01	12.76	9.81
95th-Percentile Queue Length [ft/ln]	224.24	516.12	213.90	213.65	283.09	53.98	133.90	452.59	573.90	150.20	318.98	245.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.41	38.32	30.79	68.20	31.66	27.17	70.71	46.48	69.11	68.75	41.36	40.41
Movement LOS	E	D	C	E	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	43.10			42.47			56.29			46.41		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	47.49											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.46	59.46	59.46	59.46
l_p,int, Pedestrian LOS Score for Intersectio	3.004	3.096	3.001	2.950
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	581	595	670	770
d_b, Bicycle Delay [s]	35.83	35.11	31.43	27.16
l_b,int, Bicycle LOS Score for Intersection	2.768	2.286	2.673	2.343
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	165.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.443

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	265	15	228	0	12	101	8	0	10	282	321
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	265	15	228	0	12	101	8	0	10	282	321
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	74	4	63	0	3	28	2	0	3	78	89
Total Analysis Volume [veh/h]	0	294	17	253	0	13	112	9	0	11	313	357
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	564	376	681
Degree of Utilization, x	1.07	0.36	1.44

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	17.08	1.58	33.71
95th-Percentile Queue Length [ft]	427.00	39.49	842.78
Approach Delay [s/veh]	85.52	17.79	232.35
Approach LOS	F	C	F
Intersection Delay [s/veh]	164.95		
Intersection LOS	F		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	326	215	3	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	326	215	3	0	0	0	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	60	1	0	0	0	0	0
Total Analysis Volume [veh/h]	362	239	3	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	604	377
Degree of Utilization, x	1.35	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	27.79	0.00
95th-Percentile Queue Length [ft]	694.73	0.00
Approach Delay [s/veh]	195.78	0.00
Approach LOS	F	A
Intersection Delay [s/veh]	164.95	
Intersection LOS	F	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	91.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.127

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	131	367	157	51	477	58	349	100	101	64	58	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	367	157	51	477	58	349	100	101	64	58	93
Peak Hour Factor	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530	0.8530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	108	46	15	140	17	102	29	30	19	17	27
Total Analysis Volume [veh/h]	154	430	184	60	559	68	409	117	118	75	68	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	27			0			0			27		
v_di, Inbound Pedestrian Volume crossing m	27			0			0			27		
v_co, Outbound Pedestrian Volume crossing	6			0			6			0		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			6			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	26			2			7			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	32	39	29	30	30	30
g / C, Green / Cycle	0.50	0.41	0.50	0.37	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.15	0.35	0.06	0.34	0.67	0.07	0.11
s, saturation flow rate [veh/h]	1008	1741	932	1830	955	1145	1584
c, Capacity [veh/h]	380	719	345	676	441	92	606
d1, Uniform Delay [s]	15.88	20.87	14.46	23.70	30.14	16.65	16.81
k, delay calibration	0.23	0.41	0.11	0.40	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.48	10.45	0.24	17.67	219.76	15.59	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.85	0.17	0.93	1.46	0.81	0.29
d, Delay for Lane Group [s/veh]	17.36	31.32	14.70	41.37	249.91	32.24	17.07
Lane Group LOS	B	C	B	D	F	C	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.46	11.25	0.50	13.44	35.32	1.30	2.19
50th-Percentile Queue Length [ft/ln]	36.46	281.21	12.56	335.88	882.91	32.45	54.68
95th-Percentile Queue Length [veh/ln]	2.62	16.75	0.90	19.45	55.54	2.34	3.94
95th-Percentile Queue Length [ft/ln]	65.62	418.72	22.60	486.16	1388.44	58.41	98.42

Movement, Approach, & Intersection Results

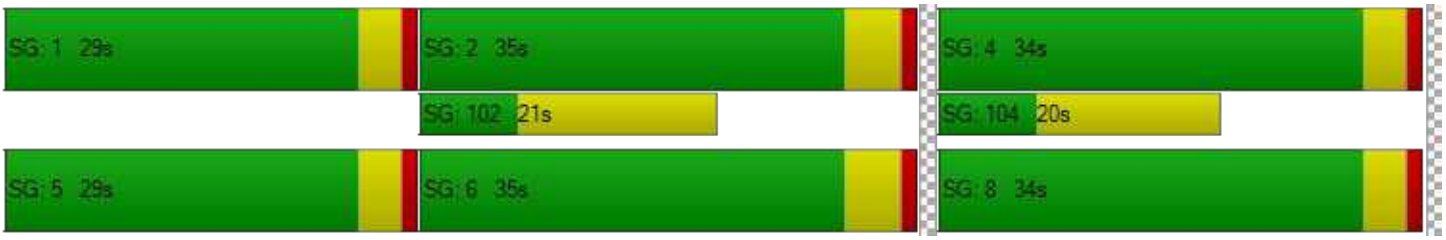
d_M, Delay for Movement [s/veh]	17.36	31.32	31.32	14.70	41.37	41.37	249.91	249.91	249.91	32.24	17.07	17.07
Movement LOS	B	C	C	B	D	D	F	F	F	C	B	B
d_A, Approach Delay [s/veh]	28.52			39.04			249.91			21.59		
Approach LOS	C			D			F			C		
d_I, Intersection Delay [s/veh]	91.50											
Intersection LOS	F											
Intersection V/C	1.127											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.91	0.00	28.91	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.214	0.000	2.133	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	766	766	766	766
d_b, Bicycle Delay [s]	15.08	14.90	14.94	14.90
l_b,int, Bicycle LOS Score for Intersection	2.827	2.693	2.622	1.975
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		35.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	485	548	65	421	956	555
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	485	548	65	421	956	555
Peak Hour Factor	0.9660	0.9660	0.9660	0.9660	0.9660	0.9660
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	142	17	109	247	144
Total Analysis Volume [veh/h]	502	567	67	436	990	575
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	43		21		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	5	5	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	55	25	55	60	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	33	33	33	21	58	72	72
g / C, Green / Cycle	0.24	0.24	0.24	0.15	0.42	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.19	0.04	0.28	0.28	0.37
s, saturation flow rate [veh/h]	1781	1830	1870	1781	1575	3560	1560
c, Capacity [veh/h]	421	433	442	267	654	1839	806
d1, Uniform Delay [s]	50.69	50.69	50.69	52.55	32.94	22.65	25.62
k, delay calibration	0.12	0.12	0.12	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	4.49	4.39	0.49	5.32	1.13	5.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.83	0.82	0.25	0.67	0.54	0.71
d, Delay for Lane Group [s/veh]	55.30	55.17	55.07	53.04	38.26	23.79	30.96
Lane Group LOS	E	E	E	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.91	12.22	12.47	2.12	12.76	10.88	15.11
50th-Percentile Queue Length [ft/ln]	297.82	305.61	311.85	53.04	318.90	272.06	377.84
95th-Percentile Queue Length [veh/ln]	17.57	17.96	18.27	3.82	18.61	16.29	21.49
95th-Percentile Queue Length [ft/ln]	439.33	448.95	456.65	95.47	465.33	407.32	537.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.27	55.11	53.04	38.26	23.79	30.96
Movement LOS	E	E	D	D	C	C
d_A, Approach Delay [s/veh]	55.18		40.23		26.42	
Approach LOS	E		D		C	
d_I, Intersection Delay [s/veh]	38.44					
Intersection LOS	D					
Intersection V/C	0.800					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	299	787
d_b, Bicycle Delay [s]	29.29	51.19	25.93
l_b,int, Bicycle LOS Score for Intersection	2.442	1.560	2.851
Bicycle LOS	B	A	C

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.944

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Off-Ramp	
Base Volume Input [veh/h]	1782	0	0	933	734	953
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1782	0	0	933	734	953
Peak Hour Factor	0.9640	1.0000	1.0000	0.9640	0.9640	0.9640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	462	0	0	242	190	247
Total Analysis Volume [veh/h]	1849	0	0	968	761	989
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	60	0	0	60	60	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	51	51	34	34
g / C, Green / Cycle	0.57	0.57	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.52	0.27	0.22	0.35
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2020	2020	1324	1077
d1, Uniform Delay [s]	17.56	11.59	22.01	26.48
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.98	0.82	0.15	1.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.48	0.57	0.92
d, Delay for Lane Group [s/veh]	25.54	12.41	22.16	27.92
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	17.49	5.50	6.16	9.80
50th-Percentile Queue Length [ft/ln]	437.34	137.54	153.99	245.06
95th-Percentile Queue Length [veh/ln]	24.35	9.35	10.23	14.94
95th-Percentile Queue Length [ft/ln]	608.83	233.71	255.75	373.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.54	0.00	0.00	12.41	22.16	27.92
Movement LOS	C			B	C	C
d_A, Approach Delay [s/veh]	25.54		12.41		25.42	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.71					
Intersection LOS	C					
Intersection V/C	0.944					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.49	34.71
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.060	2.557
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	564	1239
d_b, Bicycle Delay [s]	23.25	23.22	6.52
l_b,int, Bicycle LOS Score for Intersection	3.085	2.358	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	24.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	11	211	23	211	145	13	18	211	431	21	190	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	211	23	211	145	13	18	211	431	21	190	11
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	56	6	56	38	3	5	56	114	6	50	3
Total Analysis Volume [veh/h]	12	223	24	223	153	14	19	223	456	22	201	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	407	437	419	449	478	531	443
Degree of Utilization, x	0.03	0.57	0.53	0.37	0.51	0.86	0.53

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.09	3.41	3.03	1.69	2.81	9.20	3.03
95th-Percentile Queue Length [ft]	2.27	85.37	75.83	42.31	70.19	230.12	75.77
Approach Delay [s/veh]	20.71		18.37		30.93		19.91
Approach LOS	C		C		D		C
Intersection Delay [s/veh]	24.53						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.157

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1077	659	0	1423	550	0	0	0	922	0	361
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1077	659	0	1423	550	0	0	0	922	0	361
Peak Hour Factor	1.0000	0.9190	0.9190	1.0000	0.9190	0.9190	1.0000	1.0000	1.0000	0.9190	1.0000	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	293	179	0	387	150	0	0	0	251	0	98
Total Analysis Volume [veh/h]	0	1172	717	0	1548	598	0	0	0	1003	0	393
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	57	0	0	57	0	0	0	0	23	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	53	53	53		19	19
g / C, Green / Cycle	0.66	0.66	0.66		0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.23	0.30	0.64		0.29	0.14
s, saturation flow rate [veh/h]	5094	5094	941		3459	2813
c, Capacity [veh/h]	3370	3370	623		824	671
d1, Uniform Delay [s]	5.94	6.57	12.55		30.43	26.94
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.28	0.45	27.56		100.13	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.46	0.96		1.22	0.59
d, Delay for Lane Group [s/veh]	6.23	7.03	40.11		130.55	27.76
Lane Group LOS	A	A	D		F	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.43	3.57	12.35		19.06	3.28
50th-Percentile Queue Length [ft/ln]	60.85	89.18	308.67		476.52	82.08
95th-Percentile Queue Length [veh/ln]	4.38	6.42	18.11		29.04	5.91
95th-Percentile Queue Length [ft/ln]	109.53	160.53	452.74		726.04	147.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.23	0.00	0.00	7.03	40.11	0.00	0.00	0.00	130.55	0.00	27.76
Movement LOS		A			A	D				F		C
d_A, Approach Delay [s/veh]	3.99			16.25			0.00			101.61		
Approach LOS	A			B			A			F		
d_I, Intersection Delay [s/veh]	38.48											
Intersection LOS	D											
Intersection V/C	1.157											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	31.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.023	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1326	1326	0	475
d_b, Bicycle Delay [s]	4.56	4.54	39.97	23.23
l_b,int, Bicycle LOS Score for Intersection	2.204	2.740	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)						US-101 NB Ramps		
Base Volume Input [veh/h]	0	1463	495	0	1555	534	0	0	0	428	0	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1463	495	0	1555	534	0	0	0	428	0	606
Peak Hour Factor	1.0000	0.9580	0.9580	1.0000	0.9580	0.9580	1.0000	1.0000	1.0000	0.9580	1.0000	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	382	129	0	406	139	0	0	0	112	0	158
Total Analysis Volume [veh/h]	0	1527	517	0	1623	557	0	0	0	447	0	633
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	50	0	0	58	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	50	0	0	50	0	0	0	0	20	0	10
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	46	46	56		16	26
g / C, Green / Cycle	0.58	0.58	0.70		0.20	0.32
(v / s)_i Volume / Saturation Flow Rate	0.30	0.33	0.57		0.13	0.22
s, saturation flow rate [veh/h]	5094	1589	2828		3459	2813
c, Capacity [veh/h]	2936	916	1980		692	911
d1, Uniform Delay [s]	10.26	10.64	8.45		29.41	23.62
k, delay calibration	0.50	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.66	2.51	3.94		1.02	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.56	0.82		0.65	0.70
d, Delay for Lane Group [s/veh]	10.92	13.16	12.39		30.43	24.59
Lane Group LOS	B	B	B		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.94	5.66	5.53		3.92	5.08
50th-Percentile Queue Length [ft/ln]	123.46	141.38	138.17		98.05	126.97
95th-Percentile Queue Length [veh/ln]	8.58	9.56	9.38		7.06	8.77
95th-Percentile Queue Length [ft/ln]	214.57	238.88	234.55		176.49	219.37

Movement, Approach, & Intersection Results

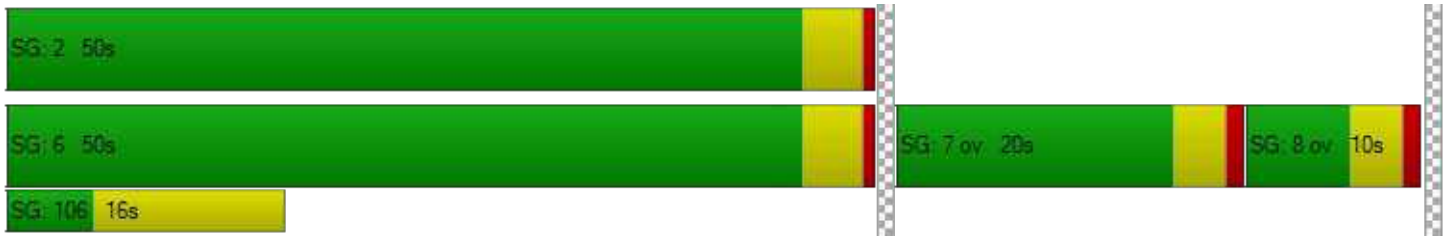
d_M, Delay for Movement [s/veh]	0.00	10.92	13.16	0.00	12.39	0.00	0.00	0.00	0.00	30.43	0.00	24.59
Movement LOS		B	B		B					C		C
d_A, Approach Delay [s/veh]	11.49			9.33			0.00			27.01		
Approach LOS	B			A			A			C		
d_I, Intersection Delay [s/veh]	14.28											
Intersection LOS	B											
Intersection V/C	0.816											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.52	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1150	1400	0	400
d_b, Bicycle Delay [s]	7.23	3.62	40.01	25.61
l_b,int, Bicycle LOS Score for Intersection	2.684	2.452	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	10	303	36	174	136	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	303	36	174	136	5
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	88	10	51	40	1
Total Analysis Volume [veh/h]	12	352	42	202	158	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	627	687	799	649
Degree of Utilization, x	0.02	0.51	0.31	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	2.95	1.29	1.00
95th-Percentile Queue Length [ft]	1.46	73.69	32.35	24.95
Approach Delay [s/veh]	13.17		9.47	10.41
Approach LOS	B		A	B
Intersection Delay [s/veh]	11.41			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	23.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.211

Intersection Setup

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravesnwood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	459	157	28	429	53	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	459	157	28	429	53	23
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	39	7	107	13	6
Total Analysis Volume [veh/h]	459	157	28	429	53	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.21	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.77	0.00	23.34	15.64
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.05	0.98	0.98
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.18	1.18	24.57	24.57
d_A, Approach Delay [s/veh]	0.00		0.54		21.01	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.60					
Intersection LOS	C					

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Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	20.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.062

Intersection Setup

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Ravesnwood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	480	357	0	417	15	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	480	357	0	417	15	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	89	0	104	4	1
Total Analysis Volume [veh/h]	480	357	0	417	15	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.06	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	9.52	0.00	20.83	13.77
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.64	5.64
d_A, Approach Delay [s/veh]	0.00		0.00		19.34	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.29					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 254: Glenwood Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	120.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.309

Intersection Setup

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Ave			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	30	137	147	16	300	19	52	316	6	9	167	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	137	147	16	300	19	52	316	6	9	167	57
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	47	50	5	103	7	18	108	2	3	57	20
Total Analysis Volume [veh/h]	41	188	201	22	411	26	71	433	8	12	229	78
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	430	459	512	381
Degree of Utilization, x	1.07	1.17	1.31	0.84

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	14.46	17.87	23.33	7.75
95th-Percentile Queue Length [ft]	361.61	446.82	583.15	193.67
Approach Delay [s/veh]	93.78	128.88	182.85	46.01
Approach LOS	F	F	F	E
Intersection Delay [s/veh]	120.80			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	47.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.976

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	232	195	109	247	231	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	195	109	247	231	131
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	63	35	79	74	42
Total Analysis Volume [veh/h]	297	250	140	317	296	168
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	560	523	526
Degree of Utilization, x	0.98	0.87	0.88

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	13.50	9.62	9.85
95th-Percentile Queue Length [ft]	337.45	240.53	246.34
Approach Delay [s/veh]	57.35	40.90	41.67
Approach LOS	F	E	E
Intersection Delay [s/veh]	47.27		
Intersection LOS	E		

Intersection Level Of Service Report
Intersection 292: Ravenswood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	30.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.153

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	3	483	0	0	522	1	0	0	0	21	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	483	0	0	522	1	0	0	0	21	0	33
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	142	0	0	154	0	0	0	0	6	0	10
Total Analysis Volume [veh/h]	4	568	0	0	614	1	0	0	0	25	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.15	0.00	0.08
d_M, Delay for Movement [s/veh]	8.74	0.00	0.00	8.59	0.00	0.00	29.68	24.33	11.89	30.95	28.23	16.24
Movement LOS	A	A	A	A	A	A	D	C	B	D	D	C
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.88	0.88
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	21.97	21.97	21.97
d_A, Approach Delay [s/veh]	0.06			0.00			21.97			21.98		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	1.15											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	18	5	52	10	4	14	13	372	3	10	212	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	5	52	10	4	14	13	372	3	10	212	15
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	15	3	1	4	4	104	1	3	60	4
Total Analysis Volume [veh/h]	20	6	58	11	4	16	15	418	3	11	238	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	688	658	788	763
Degree of Utilization, x	0.12	0.05	0.55	0.35

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.42	0.15	3.45	1.57
95th-Percentile Queue Length [ft]	10.38	3.70	86.16	39.17
Approach Delay [s/veh]	8.96	8.74	13.08	10.23
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	11.56			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	445	7	4	261
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	445	7	4	261
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	111	2	1	65
Total Analysis Volume [veh/h]	0	0	445	7	4	261
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.13	10.90	0.00	0.00	8.25	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.17	0.17
d_A, Approach Delay [s/veh]	12.51		0.00		0.12	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.05					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.510

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	2	3	438	1	1	237
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	3	438	1	1	237
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	110	0	0	59
Total Analysis Volume [veh/h]	2	3	438	1	1	237
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	707	860	824
Degree of Utilization, x	0.01	0.51	0.29

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.02	2.96	1.20
95th-Percentile Queue Length [ft]	0.53	74.00	29.98
Approach Delay [s/veh]	8.13	11.46	9.14
Approach LOS	A	B	A
Intersection Delay [s/veh]	10.63		
Intersection LOS	B		

Vistro File: P:\...\Parkline_Vistro_new Variant_PM_2024.03.12.vistro
Report File: P:\...\CPPM.pdf

Scenario 20 Cumulative (2040) Plus Project PM
3/12/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 7th Edition	SWB Thru	0.869	24.5	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 7th Edition	NEB Left	0.730	29.2	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 7th Edition	NB Left	0.857	52.9	D
4	Marsh Rd/Bay Rd	Signalized	HCM 7th Edition	SB Left	0.730	51.5	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 7th Edition	NWB Left	0.668	35.8	D
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 7th Edition	NEB Left	0.890	454.3	F
11	Middlefield Rd/Seminary Dr	Two-way stop	HCM 7th Edition	SWB Right	0.208	10,000.0	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 7th Edition	NEB Thru	0.976	126.7	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 7th Edition	EB Thru	1.009	174.2	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 7th Edition	WB Right	1.872	292.5	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 7th Edition	NB Left	1.055	60.7	E
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 7th Edition	WB Right	1.948	543.0	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 7th Edition	SB Right	1.371	301.2	F
21	Willow Rd/Bay Rd	Signalized	HCM 7th Edition	NEB Left	0.761	13.2	B
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 7th Edition	NB Left	0.579	15.7	B
23	Willow Rd/Coleman Ave	Signalized	HCM 7th Edition	EB Left	0.777	19.4	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 7th Edition	EB Left	0.741	18.3	B

25	Middlefield Rd-Willow Rd	Signalized	HCM 7th Edition	SWB Right	0.848	67.4	E
26	Ravenswood Ave/Laurel St	Signalized	HCM 7th Edition	SEB Thru	0.753	64.6	E
28	Oak Grove Ave/Laurel St	Signalized	HCM 7th Edition	NWB Thru	0.781	30.8	C
29	El Camino Real (SR 82) /Encinal Ave-Menlo College Entrance	Signalized	HCM 7th Edition	SWB Left	6.915	51.7	D
30	El Camino Real (SR 82) /Glenwood Ave-Valparaiso Ave	Signalized	HCM 7th Edition	NWB Left	0.711	35.1	D
31	El Camino Real (SR 82)/Oak Grove Ave	Signalized	HCM 7th Edition	SEB Left	0.677	28.6	C
32	El Camino Real (SR 82) /Santa Cruz Ave	Signalized	HCM 7th Edition	NEB Right	0.623	11.3	B
33	El Camino Real (SR 82) /Ravenswood Ave-Menlo Ave	Signalized	HCM 7th Edition	NWB Left	0.826	44.1	D
34	El Camino Real (SR 82) /Roble Ave	Signalized	HCM 7th Edition	SEB Left	0.572	11.4	B
35	El Camino Real (SR 82) /Middle Ave	Signalized	HCM 7th Edition	SEB Left	0.685	18.7	B
36	El Camino Real (SR 82) /Cambridge Ave	Signalized	HCM 7th Edition	SEB Left	0.482	7.4	A
38	Santa Cruz Ave/University Dr (S)	Signalized	HCM 7th Edition	SWB Left	0.693	15.6	B
39	Sand Hill Rd/Santa Cruz Ave	Signalized	HCM 7th Edition	NWB Left	0.760	43.6	D
40	Bay Rd/Ringwood Ave/Sonoma Ave	All-way stop	HCM 7th Edition	EB Right	1.020	49.7	E
88	Valparaiso Ave/ University Dr	Signalized	HCM 7th Edition	NEB Thru	0.873	56.4	E
107	Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd	Signalized	HCM 7th Edition	NEB Thru	0.764	40.1	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.924	23.5	C
115	Orange Ave/Santa Cruz Ave	All-way stop	HCM 7th Edition	SWB Left	1.013	35.5	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 7th Edition	SEB Left	0.862	36.7	D
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 7th Edition	NWB Right	0.716	87.7	F
224	Willow Rd/Laurel St	All-way stop	HCM 7th Edition	NEB Thru	0.434	10.7	B

250	Ravesnwood Avenue and Proj Dwy B1 West	Two-way stop	HCM 7th Edition	NWB Left	0.282	26.6	D
251	Ravesnwood Ave and Proj Dwy B1 East	Two-way stop	HCM 7th Edition	NWB Left	0.128	22.1	C
254	Laurel Street and Glenwood Ave	All-way stop	HCM 7th Edition	SEB Thru	0.547	14.7	B
255	Encinal Ave and Laurel Street	All-way stop	HCM 7th Edition	NEB Thru	0.651	14.6	B
292	Ravesnwood Ave/Proje Dwy/Pine Street	Two-way stop	HCM 7th Edition	NEB Left	0.036	31.8	D
293	Laurel Street and Burgess Dr	All-way stop	HCM 7th Edition	NWB Thru	0.532	12.0	B
295	Laurel Street and Proj Dwy N	Two-way stop	HCM 7th Edition	SEB Left	0.011	8.3	A
296	Laurel Street and Proj Dwy S	All-way stop	HCM 7th Edition	NWB Thru	0.508	10.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	970	1136	279	1614	607
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.15	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	970	1136	279	1614	607
Peak Hour Factor	1.0000	0.9720	0.9720	1.0000	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	249	292	70	415	156
Total Analysis Volume [veh/h]	0	998	1169	279	1660	624
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	100	100	0	100	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	40	40	0	60	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	5	0
Pedestrian Clearance [s]	0	12	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	45	43	50	50
g / C, Green / Cycle	0.45	0.43	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.25	0.33	0.48	0.39
s, saturation flow rate [veh/h]	4000	3560	3459	1589
c, Capacity [veh/h]	1809	1536	1739	799
d1, Uniform Delay [s]	20.01	24.10	23.79	20.37
k, delay calibration	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.22	3.62	1.61	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.76	0.95	0.78
d, Delay for Lane Group [s/veh]	21.23	27.72	25.41	21.01
Lane Group LOS	C	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.36	11.81	17.85	11.38
50th-Percentile Queue Length [ft/ln]	208.88	295.35	446.32	284.54
95th-Percentile Queue Length [veh/ln]	13.10	17.45	24.78	16.91
95th-Percentile Queue Length [ft/ln]	327.39	436.27	619.56	422.86

Movement, Approach, & Intersection Results

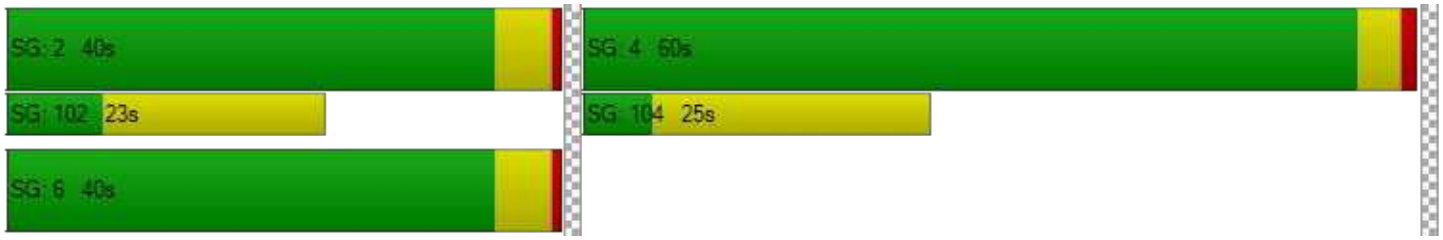
d_M, Delay for Movement [s/veh]	0.00	21.23	27.72	0.00	25.41	21.01
Movement LOS		C	C		C	C
d_A, Approach Delay [s/veh]	21.23		27.72		24.20	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	24.46					
Intersection LOS	C					
Intersection V/C	0.869					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.43	0.00	39.63
l_p,int, Pedestrian LOS Score for Intersectio	2.931	0.000	2.687
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	1117
d_b, Bicycle Delay [s]	20.95	20.90	9.74
l_b,int, Bicycle LOS Score for Intersection	2.383	2.524	1.560
Bicycle LOS	B	B	A

Sequence

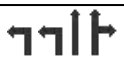
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	57	1150	2	157	1181	276	15	12	291	300	6	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	1150	2	157	1181	276	15	12	291	300	6	2
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	299	1	41	307	72	4	3	76	78	2	1
Total Analysis Volume [veh/h]	59	1194	2	163	1226	287	16	12	302	312	6	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	57	0	20	62	0	0	36	0	0	32	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	145	145	145	145	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	88	88	11	91	91	20	20	18	18
g / C, Green / Cycle	0.06	0.61	0.61	0.07	0.63	0.63	0.14	0.14	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.22	0.05	0.41	0.43	0.02	0.11	0.09	0.09
s, saturation flow rate [veh/h]	1781	3560	1868	3459	1870	1735	1818	2813	1781	1781
c, Capacity [veh/h]	100	2171	1139	256	1174	1089	250	387	220	220
d1, Uniform Delay [s]	66.72	14.14	14.14	65.12	17.02	17.56	54.69	60.33	61.07	61.07
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.13	0.47	0.89	0.98	2.85	3.48	0.15	2.60	3.39	3.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.36	0.36	0.64	0.65	0.68	0.11	0.78	0.73	0.73
d, Delay for Lane Group [s/veh]	70.85	14.61	15.03	66.10	19.88	21.04	54.84	62.92	64.46	64.46
Lane Group LOS	E	B	B	E	B	C	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.24	6.49	6.94	2.96	16.44	16.55	0.92	5.56	5.94	5.94
50th-Percentile Queue Length [ft/ln]	56.07	162.23	173.61	73.89	410.90	413.66	23.03	138.99	148.44	148.48
95th-Percentile Queue Length [veh/ln]	4.04	10.67	11.27	5.32	23.08	23.22	1.66	9.43	9.93	9.94
95th-Percentile Queue Length [ft/ln]	100.93	266.68	281.66	133.00	577.12	580.44	41.46	235.67	248.35	248.39

Movement, Approach, & Intersection Results

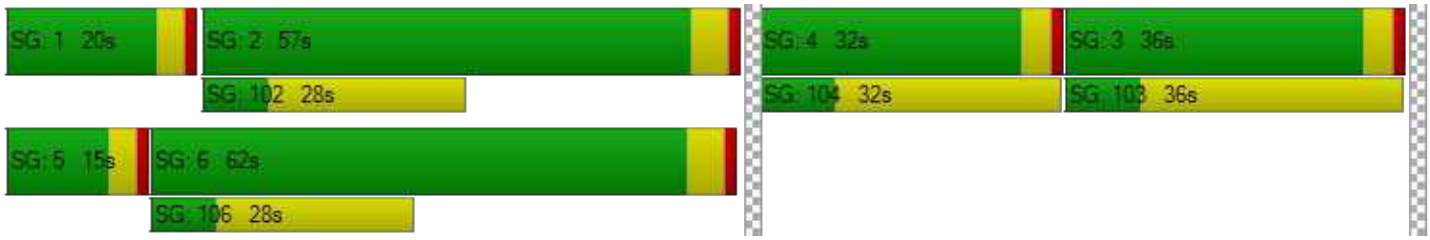
d_M, Delay for Movement [s/veh]	70.85	14.76	15.03	66.10	20.31	21.04	54.84	54.84	62.92	64.46	64.46	64.46
Movement LOS	E	B	B	E	C	C	D	D	E	E	E	E
d_A, Approach Delay [s/veh]	17.39			24.89			62.24			64.46		
Approach LOS	B			C			E			E		
d_I, Intersection Delay [s/veh]	29.24											
Intersection LOS	C											
Intersection V/C	0.730											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.93	60.93	61.85	61.85
l_p,int, Pedestrian LOS Score for Intersectio	2.949	3.182	2.404	2.147
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	718	787	439	384
d_b, Bicycle Delay [s]	29.77	26.66	44.13	47.30
l_b,int, Bicycle LOS Score for Intersection	2.250	2.942	2.104	2.088
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	52.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	301	702	93	18	950	359	466	49	190	99	83	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	301	702	93	18	950	359	466	49	190	99	83	45
Peak Hour Factor	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	191	25	5	259	98	127	13	52	27	23	12
Total Analysis Volume [veh/h]	328	766	101	20	1036	391	508	53	207	108	91	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	50	50	50	50	50	50	50	50	50	0	50	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	45	45	22	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	84	84	4	68	68	27	27	27	16	16
g / C, Green / Cycle	0.14	0.60	0.60	0.03	0.49	0.49	0.20	0.20	0.20	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.18	0.24	0.24	0.01	0.40	0.41	0.16	0.16	0.13	0.06	0.08
s, saturation flow rate [veh/h]	1781	1870	1784	1781	1870	1671	1781	1797	1558	1781	1748
c, Capacity [veh/h]	255	1123	1072	54	912	815	348	351	304	208	204
d1, Uniform Delay [s]	60.04	14.64	14.68	66.62	30.41	31.22	53.83	53.80	52.17	58.21	59.44
k, delay calibration	0.06	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	132.36	1.04	1.10	1.55	7.76	10.35	3.28	3.21	1.99	1.49	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.29	0.39	0.40	0.37	0.81	0.84	0.80	0.80	0.68	0.52	0.69
d, Delay for Lane Group [s/veh]	192.40	15.68	15.78	68.17	38.17	41.58	57.11	57.01	54.17	59.71	62.48
Lane Group LOS	F	B	B	E	D	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.37	7.50	7.25	0.72	22.52	21.95	9.83	9.87	6.99	3.73	5.00
50th-Percentile Queue Length [ft/ln]	459.23	187.46	181.13	18.09	562.99	548.65	245.64	246.86	174.75	93.34	125.00
95th-Percentile Queue Length [veh/ln]	28.25	11.99	11.66	1.30	30.30	29.63	14.97	15.03	11.33	6.72	8.67
95th-Percentile Queue Length [ft/ln]	706.19	299.73	291.49	32.57	757.55	740.73	374.16	375.69	283.15	168.02	216.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	192.40	15.72	15.78	68.17	39.14	41.58	57.07	57.01	54.17	59.71	62.48	62.48
Movement LOS	F	B	B	E	D	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	64.22			40.20			56.28			61.27		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	52.85											
Intersection LOS	D											
Intersection V/C	0.857											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.47	59.47	59.47	59.47
l_p,int, Pedestrian LOS Score for Intersectio	2.957	3.065	2.473	2.076
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	457	468
d_b, Bicycle Delay [s]	35.48	35.50	41.76	41.10
l_b,int, Bicycle LOS Score for Intersection	2.545	2.753	2.827	1.969
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	51.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	3	773	60	432	779	39	101	24	5	43	90	227
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	773	60	432	779	39	101	24	5	43	90	227
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	199	15	111	201	10	26	6	1	11	23	58
Total Analysis Volume [veh/h]	3	796	62	445	802	40	104	25	5	44	93	234
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing m	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	4.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	105	70	105	35	105	70	45	45	45	0	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	0	7	0	0	0	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	0	17	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	69	69	32	104	104	42	42
g / C, Green / Cycle	0.46	0.46	0.21	0.69	0.69	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.24	0.25	0.25	0.23	0.23	0.22	0.21
s, saturation flow rate [veh/h]	1865	1651	1781	1870	1834	623	1754
c, Capacity [veh/h]	879	757	380	1294	1269	215	513
d1, Uniform Delay [s]	29.07	29.13	58.98	9.20	9.21	54.23	49.91
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.39	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.18	2.70	101.53	0.68	0.69	10.17	6.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.54	1.17	0.33	0.33	0.62	0.72
d, Delay for Lane Group [s/veh]	31.25	31.83	160.51	9.88	9.91	64.39	56.58
Lane Group LOS	C	C	F	A	A	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.24	11.00	25.05	5.57	5.50	5.58	13.77
50th-Percentile Queue Length [ft/ln]	306.12	274.99	626.19	139.21	137.44	139.50	344.35
95th-Percentile Queue Length [veh/ln]	17.98	16.44	36.20	9.44	9.34	9.45	19.86
95th-Percentile Queue Length [ft/ln]	449.59	410.97	904.98	235.95	233.57	236.35	496.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.25	31.50	31.83	160.51	9.89	9.91	64.39	64.39	64.39	56.58	56.58	56.58
Movement LOS	C	C	C	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	31.52			61.97			64.39			56.58		
Approach LOS	C			E			E			E		
d_I, Intersection Delay [s/veh]	51.46											
Intersection LOS	D											
Intersection V/C	0.730											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	99.9	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	64.39	8.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.023	1.771	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	865	1332	537	537
d_b, Bicycle Delay [s]	24.15	8.37	40.21	40.13
l_b,int, Bicycle LOS Score for Intersection	2.270	2.621	1.781	2.172
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Middlefield Rd/Ravenswood Ave

Control Type:	Signalized	Delay (sec / veh):	35.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	166	501	420	625	436	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	501	420	625	436	81
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	132	111	164	115	21
Total Analysis Volume [veh/h]	175	527	442	658	459	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing m	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	7	5	5	2	6	4
Auxiliary Signal Groups		5,7				
Lead / Lag	Lag	-	Lag	-	-	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	35	34	34	35	70	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	39	38	38	91	53	0
Vehicle Extension [s]	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	18	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.5	2.5	6.1	0.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	Yes	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	4.50	8.10	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.50	6.10	0.00
g_i, Effective Green Time [s]	35	73	33	85	53
g / C, Green / Cycle	0.27	0.56	0.26	0.66	0.41
(v / s)_i Volume / Saturation Flow Rate	0.10	0.33	0.25	0.35	0.30
s, saturation flow rate [veh/h]	1781	1576	1781	1870	1806
c, Capacity [veh/h]	476	852	459	1225	740
d1, Uniform Delay [s]	38.73	20.57	47.67	11.93	32.40
k, delay calibration	0.04	0.50	0.42	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	3.36	30.41	1.69	6.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.62	0.96	0.54	0.73
d, Delay for Lane Group [s/veh]	38.91	23.93	78.07	13.62	38.80
Lane Group LOS	D	C	E	B	D
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.60	11.62	17.81	10.06	15.48
50th-Percentile Queue Length [ft/ln]	115.03	290.46	445.22	251.39	387.08
95th-Percentile Queue Length [veh/ln]	8.12	17.21	24.73	15.26	21.94
95th-Percentile Queue Length [ft/ln]	202.98	430.21	618.24	381.40	548.41

Movement, Approach, & Intersection Results

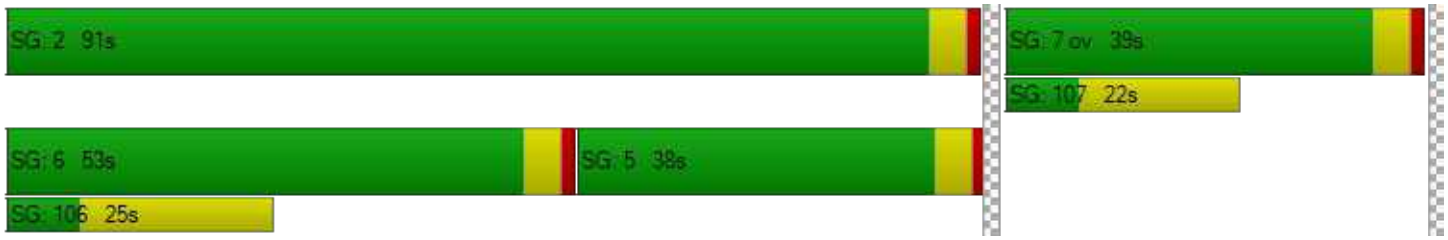
d_M, Delay for Movement [s/veh]	38.91	23.93	78.07	13.62	38.80	38.80
Movement LOS	D	C	E	B	D	D
d_A, Approach Delay [s/veh]	27.67		39.52		38.80	
Approach LOS	C		D		D	
d_I, Intersection Delay [s/veh]	35.80					
Intersection LOS	D					
Intersection V/C	0.668					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.48	54.48	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.357	2.742	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	531	1331	746
d_b, Bicycle Delay [s]	35.28	7.38	25.67
l_b,int, Bicycle LOS Score for Intersection	1.560	3.375	2.457
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Middlefield Rd/Ringwood Ave

Control Type:	Signalized	Delay (sec / veh):	454.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	405	125	102	257	31	349	94	683	121	367	546	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	405	125	102	257	31	349	94	683	121	367	546	26
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	33	27	68	8	93	25	182	32	98	145	7
Total Analysis Volume [veh/h]	431	133	109	273	33	371	100	727	129	390	581	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing m	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	2	8	2	6	8	6	5	2	8	1	6	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	7	10	7	7	7	5	10	7	4	7	0
Maximum Green [s]	35	35	35	50	35	50	10	35	35	10	50	0
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	53	38	53	82	38	82	10	53	38	39	82	0
Vehicle Extension [s]	3.0	3.0	3.0	2.5	3.0	2.5	2.0	3.0	3.0	3.0	2.5	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	18	26	18	18	26	18	0	18	26	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	0.0	0.0	6.1	0.0	6.1	0.0	0.0	0.0	0.5	6.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		Yes	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	8.10	8.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	6.10	6.10
g_i, Effective Green Time [s]	41	41	41	41	8	51	51	32	69	69
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.06	0.39	0.39	0.25	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.44	0.14	0.43	0.24	0.06	0.20	0.08	0.22	0.16	0.16
s, saturation flow rate [veh/h]	981	1709	706	1545	1781	3560	1525	1781	1870	1831
c, Capacity [veh/h]	55	535	273	484	110	1393	596	438	996	975
d1, Uniform Delay [s]	64.99	35.74	55.18	40.02	60.64	30.27	26.22	47.33	17.00	17.02
k, delay calibration	0.50	0.11	0.50	0.36	0.25	0.50	0.50	0.35	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3084.34	0.60	90.60	8.17	41.72	1.40	0.83	17.48	0.80	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	7.77	0.45	1.12	0.77	0.91	0.52	0.22	0.89	0.31	0.31
d, Delay for Lane Group [s/veh]	3149.34	36.34	145.78	48.19	102.37	31.68	27.05	64.80	17.81	17.85
Lane Group LOS	F	D	F	D	F	C	C	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	49.38	6.40	15.95	11.72	4.53	8.88	2.78	14.17	5.27	5.20
50th-Percentile Queue Length [ft/ln]	1234.45	160.06	398.87	292.92	113.28	222.10	69.62	354.24	131.84	129.97
95th-Percentile Queue Length [veh/ln]	83.63	10.55	24.07	17.33	8.02	13.77	5.01	20.34	9.04	8.94
95th-Percentile Queue Length [ft/ln]	2090.68	263.81	601.78	433.26	200.56	344.30	125.32	508.58	226.00	223.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3149.34	36.34	36.34	145.78	145.78	48.19	102.37	31.68	27.05	64.80	17.82	17.85
Movement LOS	F	D	D	F	F	D	F	C	C	E	B	B
d_A, Approach Delay [s/veh]	2029.95			92.30			38.45			36.17		
Approach LOS	F			F			D			D		
d_I, Intersection Delay [s/veh]	454.32											
Intersection LOS	F											
Intersection V/C	0.890											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.46	54.46	54.46	54.46
l_p,int, Pedestrian LOS Score for Intersectio	2.139	2.390	3.312	3.506
Crosswalk LOS	B	B	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	515	515	746	1192
d_b, Bicycle Delay [s]	35.90	36.19	25.78	10.67
l_b,int, Bicycle LOS Score for Intersection	2.670	2.677	2.348	2.384
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 11: Middlefield Rd/Seminary Dr

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.208

Intersection Setup

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name	Seminary Drive			Seminary Drive			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	132	1	394	10	2	68	32	757	8	78	755	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	1	394	10	2	68	32	757	8	78	755	9
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	0	109	3	1	19	9	210	2	22	210	3
Total Analysis Volume [veh/h]	147	1	438	11	2	76	36	841	9	87	839	10
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

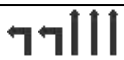
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	4.56	0.02	1.21	0.00	0.04	0.21	0.05	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	2313.05	2266.32	2211.21	10000.0	10000.0	10000.0	9.78	0.00	0.00	10.13	0.00	0.00
Movement LOS	F	F	F	F	F	F	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	64.02	64.02	64.02	13.58	13.58	13.58	0.14	0.00	0.00	0.37	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1600.61	1600.61	1600.61	339.56	339.56	339.56	3.58	0.00	0.00	9.27	0.00	0.00
d_A, Approach Delay [s/veh]	2236.85			10000.00			0.40			0.94		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	881.87											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	126.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.976

Intersection Setup

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3779	95	333	1119	87	1378
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3779	95	333	1119	87	1378
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	964	24	85	285	22	352
Total Analysis Volume [veh/h]	3856	97	340	1142	89	1406
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	200
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	198.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	4	5	5	5	4	4
Maximum Green [s]	175	50	50	50	50	50
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	4.0	0.5	3.5	0.5	4.0	4.0
Split [s]	124	154	30	154	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	0	4	4
Pedestrian Clearance [s]	35	5	0	5	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	296	296	296	296	296	296
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	178	178	51	233	53	108
g / C, Green / Cycle	0.60	0.60	0.17	0.79	0.18	0.36
(v / s)_i Volume / Saturation Flow Rate	0.76	0.06	0.10	0.22	0.03	0.33
s, saturation flow rate [veh/h]	5094	1578	3459	5094	3459	4220
c, Capacity [veh/h]	3063	949	601	4011	620	1497
d1, Uniform Delay [s]	58.97	25.04	111.95	8.62	102.29	92.35
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	117.13	0.05	0.84	0.04	0.11	6.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.26	0.10	0.57	0.28	0.14	0.94
d, Delay for Lane Group [s/veh]	176.10	25.09	112.78	8.66	102.40	98.84
Lane Group LOS	F	C	F	A	F	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	106.84	2.98	12.11	6.61	2.95	35.99
50th-Percentile Queue Length [ft/ln]	2670.97	74.55	302.83	165.36	73.72	899.76
95th-Percentile Queue Length [veh/ln]	148.46	5.37	17.82	10.83	5.31	45.83
95th-Percentile Queue Length [ft/ln]	3711.45	134.20	445.53	270.81	132.70	1145.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	176.10	25.09	112.78	8.66	102.40	98.84
Movement LOS	F	C	F	A	F	F
d_A, Approach Delay [s/veh]	172.39		32.55		99.05	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	126.66					
Intersection LOS	F					
Intersection V/C	0.976					

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	140.06	0.00	139.09
l_p,int, Pedestrian LOS Score for Intersectio	3.973	0.000	3.055
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	777	1001	264
d_b, Bicycle Delay [s]	55.30	36.94	111.53
l_b,int, Bicycle LOS Score for Intersection	3.734	2.375	1.670
Bicycle LOS	D	B	A

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	174.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.009

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	116	27	1401	49	194	82	32	2089	490	405	977	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	27	1401	49	194	82	32	2089	490	405	977	6
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	7	364	13	50	21	8	543	127	105	254	2
Total Analysis Volume [veh/h]	121	28	1458	51	202	85	33	2174	510	421	1017	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing m	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	120.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	29	42	42	23	36	42	78	155	97	20	97	155
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	11	0	11	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	103	103	103	103	103	103	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	9	15	43	4	11	11	68	40	40	68	60	60
g / C, Green / Cycle	0.09	0.15	0.42	0.04	0.11	0.11	0.66	0.39	0.39	0.66	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.07	0.02	0.35	0.03	0.13	0.06	0.03	0.70	0.53	0.29	0.20	0.00
s, saturation flow rate [veh/h]	1781	1593	4184	1781	1593	1464	1158	3097	966	1457	5094	1589
c, Capacity [veh/h]	154	233	1751	67	169	155	766	1208	377	1023	3000	936
d1, Uniform Delay [s]	45.96	38.04	26.47	48.89	45.87	43.33	6.47	31.29	31.29	17.81	10.83	8.70
k, delay calibration	0.11	0.11	0.25	0.11	0.14	0.11	0.11	0.14	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.63	0.23	2.51	15.61	103.73	2.99	0.02	360.59	175.25	0.27	0.07	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.12	0.83	0.76	1.20	0.55	0.04	1.80	1.35	0.41	0.34	0.01
d, Delay for Lane Group [s/veh]	54.59	38.27	28.98	64.50	149.60	46.32	6.50	391.88	206.54	18.08	10.90	8.71
Lane Group LOS	D	D	C	E	F	D	A	F	F	B	B	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	3.31	0.31	10.22	1.60	4.60	2.20	0.11	49.90	27.30	1.64	3.75	0.05
50th-Percentile Queue Length [ft/ln]	82.86	7.65	255.43	40.09	115.12	54.89	2.85	1247.58	682.60	40.88	93.70	1.34
95th-Percentile Queue Length [veh/ln]	5.97	0.55	15.46	2.89	8.29	3.95	0.21	81.21	42.72	2.94	6.75	0.10
95th-Percentile Queue Length [ft/ln]	149.15	13.78	386.48	72.16	207.21	98.81	5.14	2030.24	1067.94	73.58	168.66	2.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.59	38.27	28.98	64.50	149.60	46.32	6.50	391.88	206.54	18.08	10.90	8.71
Movement LOS	D	D	C	E	F	D	A	F	F	B	B	A
d_A, Approach Delay [s/veh]	31.07			110.79			352.41			12.98		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	174.19											
Intersection LOS	F											
Intersection V/C	1.009											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.65	0.00	42.65	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.387	0.000	3.183	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	734	603	2907	1776
d_b, Bicycle Delay [s]	20.56	25.05	10.55	0.65
l_b,int, Bicycle LOS Score for Intersection	2.885	1.838	3.054	2.354
Bicycle LOS	C	A	C	B

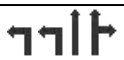
Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 17: Willow Rd (SR 114)/Hamilton Ave

Control Type:	Signalized	Delay (sec / veh):	292.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.872

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	144	1309	21	330	712	104	62	9	70	69	16	454
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	1309	21	330	712	104	62	9	70	69	16	454
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	342	5	86	186	27	16	2	18	18	4	119
Total Analysis Volume [veh/h]	150	1368	22	345	744	109	65	9	73	72	17	474
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			86			11			85		
v_di, Inbound Pedestrian Volume crossing m	11			85			12			86		
v_co, Outbound Pedestrian Volume crossing	13			14			14			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			14			14			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			18			7			15		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	85	79	16	79	85	32	32	32	32	32	32
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	92	77	77	92	83	83	31	31	31	31
g / C, Green / Cycle	0.71	0.59	0.59	0.71	0.64	0.64	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.48	0.83	0.83	0.40	0.52	0.53	0.07	0.12	0.06	0.82
s, saturation flow rate [veh/h]	312	837	831	865	837	787	905	692	1284	599
c, Capacity [veh/h]	272	497	494	246	536	504	55	164	194	143
d1, Uniform Delay [s]	20.46	26.35	26.35	35.12	17.51	17.87	64.89	42.84	52.98	49.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.82	192.37	194.17	203.84	12.70	14.49	110.67	0.87	1.17	1113.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	1.40	1.41	1.40	0.81	0.83	1.17	0.50	0.37	3.44
d, Delay for Lane Group [s/veh]	28.27	218.71	220.52	238.96	30.21	32.35	175.57	43.71	54.16	1163.35
Lane Group LOS	C	F	F	F	C	C	F	D	D	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.77	40.41	40.39	8.09	11.05	10.99	3.56	2.35	2.01	48.87
50th-Percentile Queue Length [ft/ln]	44.32	1010.17	1009.76	202.13	276.34	274.69	88.99	58.83	50.32	1221.67
95th-Percentile Queue Length [veh/ln]	3.19	63.51	63.57	14.55	16.51	16.42	6.41	4.24	3.62	80.75
95th-Percentile Queue Length [ft/ln]	79.77	1587.83	1589.29	363.83	412.65	410.60	160.18	105.90	90.58	2018.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.27	219.60	220.52	238.96	31.10	32.35	175.57	43.71	43.71	54.16	1163.35	1163.35
Movement LOS	C	F	F	F	C	C	F	D	D	D	F	F
d_A, Approach Delay [s/veh]	200.98			91.07			102.02			1021.50		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	292.55											
Intersection LOS	F											
Intersection V/C	1.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
l_p,int, Pedestrian LOS Score for Intersectio	3.165	3.138	2.212	2.638
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1155	443	447
d_b, Bicycle Delay [s]	9.21	11.70	39.48	39.48
l_b,int, Bicycle LOS Score for Intersection	2.830	2.548	1.802	2.489
Bicycle LOS	C	B	A	B

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: Willow Rd (SR 114)/Ivy Dr

Control Type:	Signalized	Delay (sec / veh):	60.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.055

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	133	1383	804	281	64	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	1383	804	281	64	79
Peak Hour Factor	0.9670	0.9670	0.9670	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	358	208	73	17	20
Total Analysis Volume [veh/h]	138	1430	831	291	66	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing m	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	115	95	95	30	30
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	17	122	102	102	16	16
g / C, Green / Cycle	0.12	0.84	0.70	0.70	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.11	0.90	0.67	0.74	0.07	0.09
s, saturation flow rate [veh/h]	1265	1593	837	755	994	893
c, Capacity [veh/h]	148	1341	589	531	109	98
d1, Uniform Delay [s]	63.36	11.46	19.28	21.45	61.47	63.01
k, delay calibration	0.24	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.24	44.43	27.10	54.64	1.99	6.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	1.07	0.95	1.06	0.60	0.84
d, Delay for Lane Group [s/veh]	99.60	55.90	46.38	76.09	63.46	69.82
Lane Group LOS	F	F	D	F	E	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.48	21.15	19.06	23.48	2.39	3.15
50th-Percentile Queue Length [ft/ln]	162.03	528.71	476.58	586.91	59.73	78.79
95th-Percentile Queue Length [veh/ln]	10.66	30.37	26.22	32.92	4.30	5.67
95th-Percentile Queue Length [ft/ln]	266.40	759.30	655.59	822.95	107.52	141.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	99.60	55.90	56.03	76.09	63.46	69.82
Movement LOS	F	F	E	E	E	E
d_A, Approach Delay [s/veh]	59.74		61.24		66.98	
Approach LOS	E		E		E	
d_I, Intersection Delay [s/veh]	60.71					
Intersection LOS	E					
Intersection V/C	1.055					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.75	63.75	61.89
l_p,int, Pedestrian LOS Score for Intersectio	2.969	3.006	2.150
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1532	1256	373
d_b, Bicycle Delay [s]	3.97	10.06	48.03
l_b,int, Bicycle LOS Score for Intersection	2.853	2.485	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 19: Willow Rd (SR 114)/O'Brien Dr

Control Type:	Signalized	Delay (sec / veh):	543.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.948

Intersection Setup

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1409	420	68	876	705	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1409	420	68	876	705	77
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	357	106	17	222	179	20
Total Analysis Volume [veh/h]	1429	426	69	888	715	78
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	110	110	21	124	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	108	108	16	124	21	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	145	145	145	145	145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	104	104	13	120	18	18
g / C, Green / Cycle	0.72	0.72	0.09	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	1.10	0.76	0.11	0.69	0.62	0.62
s, saturation flow rate [veh/h]	1302	561	647	1293	647	632
c, Capacity [veh/h]	933	402	58	1070	79	78
d1, Uniform Delay [s]	20.59	19.21	66.07	6.90	63.71	63.71
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	244.50	61.65	136.19	7.48	1839.35	1860.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.53	1.06	1.18	0.83	5.03	5.07
d, Delay for Lane Group [s/veh]	265.08	80.86	202.26	14.37	1903.06	1924.16
Lane Group LOS	F	F	F	B	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	44.98	17.57	4.35	6.23	43.55	42.99
50th-Percentile Queue Length [ft/ln]	1124.62	439.16	108.82	155.84	1088.68	1074.67
95th-Percentile Queue Length [veh/ln]	73.80	25.64	7.84	10.33	69.09	68.27
95th-Percentile Queue Length [ft/ln]	1845.12	641.07	195.88	258.20	1727.31	1706.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	265.08	80.86	202.26	14.37	1912.38	1924.16
Movement LOS	F	F	F	B	F	F
d_A, Approach Delay [s/veh]	222.78		27.92		1913.53	
Approach LOS	F		C		F	
d_I, Intersection Delay [s/veh]	542.97					
Intersection LOS	F					
Intersection V/C	1.948					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	61.98
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.382
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1654	245
d_b, Bicycle Delay [s]	5.84	2.18	55.91
l_b,int, Bicycle LOS Score for Intersection	3.090	2.349	2.868
Bicycle LOS	C	B	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 20: Willow Rd (SR 114)/Newbridge St

Control Type:	Signalized	Delay (sec / veh):	301.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.371

Intersection Setup

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	322	1431	523	93	1225	17	44	177	526	488	178	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	322	1431	523	93	1225	17	44	177	526	488	178	55
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	381	139	25	326	5	12	47	140	130	47	15
Total Analysis Volume [veh/h]	343	1522	556	99	1303	18	47	188	560	519	189	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11			20			10			19		
v_di, Inbound Pedestrian Volume crossing m	10			19			11			20		
v_co, Outbound Pedestrian Volume crossing	3			7			7			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			7			7			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	140.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	4
Maximum Green [s]	21	40	40	21	40	40	5	25	25	5	21	5
Amber [s]	3.0	4.4	4.4	3.0	4.0	4.0	3.0	3.6	3.6	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0
Split [s]	31	51	51	14	34	34	14	34	34	51	31	51
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.4	3.4	1.0	3.0	3.0	2.0	2.6	2.6	2.0	1.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.40	5.40	3.00	5.00	5.00	4.00	4.60	4.60	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.40	3.40	1.00	3.00	3.00	2.00	2.60	2.60	2.00	1.00	1.00
g_i, Effective Green Time [s]	28	46	46	11	29	29	9	33	33	48	24	24
g / C, Green / Cycle	0.22	0.35	0.35	0.08	0.23	0.23	0.07	0.25	0.25	0.37	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.27	0.55	0.59	0.11	0.46	0.46	0.04	0.19	0.37	0.15	0.14	0.04
s, saturation flow rate [veh/h]	1265	2530	1156	937	1874	975	1132	984	1526	3357	1329	1461
c, Capacity [veh/h]	273	899	411	79	427	222	55	249	386	1228	244	269
d1, Uniform Delay [s]	51.00	41.90	41.90	59.50	50.20	50.20	65.00	44.82	47.90	30.92	50.48	44.96
k, delay calibration	0.50	0.50	0.50	0.15	0.50	0.50	0.11	0.21	0.50	0.11	0.17	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	142.56	255.79	304.78	139.82	474.11	483.98	27.92	8.76	216.29	0.23	7.80	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.26	1.56	1.65	1.25	2.04	2.04	0.85	0.75	1.45	0.42	0.77	0.22
d, Delay for Lane Group [s/veh]	193.56	297.70	346.69	199.32	524.31	534.19	92.92	53.58	264.19	31.15	58.27	45.12
Lane Group LOS	F	F	F	F	F	F	F	D	F	C	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.48	45.86	47.50	5.71	35.06	37.08	2.01	6.19	35.49	6.17	6.39	1.64
50th-Percentile Queue Length [ft/ln]	486.89	1146.57	1187.59	142.85	876.61	927.00	50.28	154.87	887.18	154.30	159.69	41.01
95th-Percentile Queue Length [veh/ln]	29.91	71.74	75.43	10.29	57.46	60.50	3.62	10.28	54.30	10.25	10.53	2.95
95th-Percentile Queue Length [ft/ln]	747.83	1793.45	1885.70	257.13	1436.50	1512.55	90.50	256.92	1357.60	256.16	263.31	73.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	193.56	301.66	346.69	199.32	527.61	534.19	92.92	53.58	264.19	31.15	58.27	45.12
Movement LOS	F	F	F	F	F	F	F	D	F	C	E	D
d_A, Approach Delay [s/veh]	296.69			504.80			204.26			38.91		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	301.19											
Intersection LOS	F											
Intersection V/C	1.371											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
l_p,int, Pedestrian LOS Score for Intersectio	3.505	3.033	2.477	2.733
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	702	446	452	431
d_b, Bicycle Delay [s]	27.40	39.33	39.00	40.14
l_b,int, Bicycle LOS Score for Intersection	2.891	2.341	2.871	2.825
Bicycle LOS	C	B	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 21: Willow Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	52	1268	1068	427	390	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	1268	1068	427	390	54
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	340	286	115	105	14
Total Analysis Volume [veh/h]	56	1361	1146	458	418	58
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	13	100	87	87	40	40
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	31	31	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	33	27	27	16	16
g / C, Green / Cycle	0.04	0.57	0.46	0.46	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.03	0.38	0.32	0.30	0.23	0.04
s, saturation flow rate [veh/h]	1781	3560	3560	1550	1781	1566
c, Capacity [veh/h]	73	2012	1652	719	479	421
d1, Uniform Delay [s]	27.71	8.94	12.37	11.79	20.40	16.20
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.99	0.57	0.76	1.34	2.00	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.68	0.69	0.64	0.87	0.14
d, Delay for Lane Group [s/veh]	33.71	9.52	13.13	13.13	22.40	16.26
Lane Group LOS	C	A	B	B	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.85	4.74	4.88	3.85	5.16	0.55
50th-Percentile Queue Length [ft/ln]	21.32	118.42	121.92	96.23	128.97	13.64
95th-Percentile Queue Length [veh/ln]	1.53	8.31	8.50	6.93	8.88	0.98
95th-Percentile Queue Length [ft/ln]	38.37	207.66	212.46	173.21	222.09	24.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.71	9.52	13.13	13.13	22.40	16.26
Movement LOS	C	A	B	B	C	B
d_A, Approach Delay [s/veh]	10.47		13.13		21.65	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	13.21					
Intersection LOS	B					
Intersection V/C	0.761					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	19.17
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.238
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3244	2797	1229
d_b, Bicycle Delay [s]	11.32	4.65	4.34
l_b,int, Bicycle LOS Score for Intersection	2.729	2.883	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 22: Willow Rd/Durham St-VA Med Entrance

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.579

Intersection Setup

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	4	990	6	46	756	14	49	34	14	29	40	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	990	6	46	756	14	49	34	14	29	40	37
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	264	2	12	201	4	13	9	4	8	11	10
Total Analysis Volume [veh/h]	4	1055	6	49	806	15	52	36	15	31	43	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing m	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	0	33	33	2	35	5	5	5	6	6
g / C, Green / Cycle	0.00	0.51	0.51	0.04	0.55	0.08	0.08	0.08	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.00	0.28	0.28	0.03	0.44	0.02	0.02	0.01	0.02	0.05
s, saturation flow rate [veh/h]	1781	1870	1865	1781	1863	1781	1853	1457	1781	1684
c, Capacity [veh/h]	8	963	961	65	1019	134	139	110	170	161
d1, Uniform Delay [s]	32.18	10.64	10.64	30.92	11.88	28.39	28.38	27.96	26.97	27.86
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.82	1.06	1.06	16.14	3.26	1.40	1.29	0.56	0.51	2.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.55	0.55	0.76	0.81	0.33	0.32	0.14	0.18	0.51
d, Delay for Lane Group [s/veh]	77.00	11.69	11.70	47.06	15.14	29.79	29.67	28.52	27.49	30.36
Lane Group LOS	E	B	B	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	4.77	4.77	1.03	8.97	0.71	0.71	0.24	0.45	1.28
50th-Percentile Queue Length [ft/ln]	3.93	119.33	119.14	25.72	224.17	17.66	17.86	5.96	11.32	32.08
95th-Percentile Queue Length [veh/ln]	0.28	8.36	8.35	1.85	13.88	1.27	1.29	0.43	0.82	2.31
95th-Percentile Queue Length [ft/ln]	7.07	208.90	208.64	46.30	346.94	31.80	32.15	10.73	20.38	57.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.00	11.70	11.70	47.06	15.14	15.14	29.77	29.67	28.52	27.49	30.36	30.36
Movement LOS	E	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.94			16.93			29.55			29.57		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.73											
Intersection LOS	B											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.26	22.26	22.26	22.26
l_p,int, Pedestrian LOS Score for Intersectio	2.502	2.708	2.126	1.977
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	619	619	928	928
d_b, Bicycle Delay [s]	15.44	15.49	9.29	9.29
l_b,int, Bicycle LOS Score for Intersection	2.438	2.995	1.730	1.746
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: Willow Rd/Coleman Ave

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	32	932	5	9	660	137	211	7	52	9	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	932	5	9	660	137	211	7	52	9	8	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	245	1	2	174	36	56	2	14	2	2	2
Total Analysis Volume [veh/h]	34	981	5	9	695	144	222	7	55	9	8	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing m	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	90	90	90	90	90	90	30	30	30	0	30	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	86	86	86	86	26	26
g / C, Green / Cycle	0.72	0.72	0.72	0.72	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.53	0.02	0.47	0.20	0.01
s, saturation flow rate [veh/h]	655	1868	571	1803	1391	1696
c, Capacity [veh/h]	357	1338	278	1291	353	407
d1, Uniform Delay [s]	18.94	10.22	23.20	9.03	45.90	37.39
k, delay calibration	0.50	0.50	0.50	0.50	0.40	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.53	3.66	0.22	2.55	14.42	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.74	0.03	0.65	0.80	0.06
d, Delay for Lane Group [s/veh]	19.47	13.88	23.41	11.57	60.33	37.45
Lane Group LOS	B	B	C	B	E	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.61	15.56	0.18	11.23	9.69	0.58
50th-Percentile Queue Length [ft/ln]	15.28	389.05	4.46	280.75	242.29	14.45
95th-Percentile Queue Length [veh/ln]	1.10	22.03	0.32	16.73	14.80	1.04
95th-Percentile Queue Length [ft/ln]	27.50	550.79	8.02	418.14	369.93	26.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.47	13.88	13.88	23.41	11.57	11.57	60.33	60.33	60.33	37.45	37.45	37.45
Movement LOS	B	B	B	C	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	14.07			11.70			60.33			37.45		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	19.44											
Intersection LOS	B											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.45	49.45	49.45	49.45
l_p,int, Pedestrian LOS Score for Intersectio	2.449	2.939	2.006	1.760
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1433	1433	432	432
d_b, Bicycle Delay [s]	4.84	4.83	36.92	36.92
l_b,int, Bicycle LOS Score for Intersection	3.243	2.959	2.028	1.599
Bicycle LOS	C	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Willow Rd/Gilbert Ave

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	813	134	33	655	7	76	108	3	132	45	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	813	134	33	655	7	76	108	3	132	45	129
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	215	35	9	173	2	20	29	1	35	12	34
Total Analysis Volume [veh/h]	3	860	142	35	693	7	80	114	3	140	48	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing m	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	69
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	23	23	23	23	23	47	47	47	0	47	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	43	43	43	43	18	18	18	18
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.00	0.55	0.06	0.38	0.07	0.06	0.11	0.11
s, saturation flow rate [veh/h]	746	1814	562	1866	1195	1860	1271	1625
c, Capacity [veh/h]	397	1139	198	1171	248	472	317	412
d1, Uniform Delay [s]	12.82	10.70	25.60	7.66	28.65	20.54	26.92	21.72
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	9.82	1.95	2.25	0.74	0.27	0.97	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.88	0.18	0.60	0.32	0.25	0.44	0.45
d, Delay for Lane Group [s/veh]	12.85	20.52	27.55	9.92	29.39	20.81	27.89	22.48
Lane Group LOS	B	C	C	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	13.15	0.60	5.76	1.27	1.49	2.18	2.52
50th-Percentile Queue Length [ft/ln]	0.77	328.64	15.12	143.95	31.75	37.27	54.50	63.03
95th-Percentile Queue Length [veh/ln]	0.06	19.09	1.09	9.69	2.29	2.68	3.92	4.54
95th-Percentile Queue Length [ft/ln]	1.39	477.29	27.22	242.33	57.14	67.09	98.10	113.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.85	20.52	20.52	27.55	9.92	9.92	29.39	20.81	20.81	27.89	22.48	22.48
Movement LOS	B	C	C	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.49			10.76			24.29			24.81		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	18.28											
Intersection LOS	B											
Intersection V/C	0.741											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.40	24.40	24.40	24.40
l_p,int, Pedestrian LOS Score for Intersectio	2.623	2.598	1.999	2.142
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	547	547	1243	1243
d_b, Bicycle Delay [s]	18.35	18.32	4.96	4.97
l_b,int, Bicycle LOS Score for Intersection	3.218	2.772	1.885	2.096
Bicycle LOS	C	C	A	B

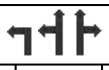
Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: Middlefield Rd-Willow Rd

Control Type:	Signalized	Delay (sec / veh):	67.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	22	375	277	339	142	388	111	432	303	372	522	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	22	375	277	339	142	388	111	432	303	372	522	27
Peak Hour Factor	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	98	72	88	37	101	29	113	79	97	136	7
Total Analysis Volume [veh/h]	23	391	289	354	148	405	116	451	316	388	545	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	12			6			12			6		
v_di, Inbound Pedestrian Volume crossing m	12			6			12			6		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			4			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	50			19			4			14		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	40	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	40	0	34	34	34	0	38	0	29	29	29
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	32	32	32	39	39	39	24	24	24	24	27	27	27
g / C, Green / Cycle	0.23	0.23	0.23	0.28	0.28	0.28	0.17	0.17	0.17	0.17	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.21	0.20	0.14	0.14	0.26	0.07	0.15	0.15	0.15	0.18	0.18	0.18
s, saturation flow rate [veh/h]	1781	1870	1447	1781	1832	1546	1781	1870	1752	1544	1781	1849	1828
c, Capacity [veh/h]	404	425	329	491	505	426	310	325	305	269	342	355	351
d1, Uniform Delay [s]	42.42	52.94	51.17	42.78	42.64	49.35	51.15	56.03	56.14	56.05	55.47	55.47	55.56
k, delay calibration	0.11	0.26	0.23	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.31	0.31	0.31
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	17.26	14.76	3.75	3.50	32.83	0.75	5.92	6.68	8.39	21.83	21.24	22.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.92	0.88	0.51	0.50	0.95	0.37	0.84	0.85	0.87	0.91	0.91	0.92
d, Delay for Lane Group [s/veh]	42.48	70.20	65.94	46.53	46.14	82.18	51.90	61.95	62.82	64.44	77.30	76.71	78.20
Lane Group LOS	D	E	E	D	D	F	D	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.64	15.48	10.96	7.94	7.95	17.76	3.70	9.94	9.49	8.63	12.90	13.33	13.42
50th-Percentile Queue Length [ft/ln]	16.01	387.11	273.92	198.44	198.67	443.98	92.42	248.4	237.1	215.7	322.50	333.29	335.56
95th-Percentile Queue Length [veh/ln]	1.15	21.94	16.39	12.56	12.57	24.67	6.65	15.11	14.54	13.45	18.79	19.32	19.43
95th-Percentile Queue Length [ft/ln]	28.82	548.44	409.63	313.96	314.25	616.77	166.3	377.6	363.4	336.1	469.76	482.99	485.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.48	70.20	65.94	46.42	46.14	82.18	51.90	62.29	64.10	77.19	77.52	78.20
Movement LOS	D	E	E	D	D	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	67.54			62.34			61.54			77.40		
Approach LOS	E			E			E			E		
d_I, Intersection Delay [s/veh]	67.39											
Intersection LOS	E											
Intersection V/C	0.848											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.55	58.55	58.55	58.55
l_p,int, Pedestrian LOS Score for Intersectio	2.394	2.808	4.395	2.679
Crosswalk LOS	B	C	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	510	418	475	347
d_b, Bicycle Delay [s]	39.88	44.22	40.78	48.18
l_b,int, Bicycle LOS Score for Intersection	2.720	3.056	3.113	2.352
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 26: Ravenswood Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	64.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	85.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	80	548	124	20	427	94	178	224	58	53	199	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	548	124	20	427	94	178	224	58	53	199	24
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	151	34	5	117	26	49	62	16	15	55	7
Total Analysis Volume [veh/h]	88	602	136	22	469	103	196	246	64	58	219	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	18			20			20			17		
v_di, Inbound Pedestrian Volume crossing m	17			20			20			18		
v_co, Outbound Pedestrian Volume crossing	33			29			34			29		
v_ci, Inbound Pedestrian Volume crossing mi	34			29			33			29		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			5			20			7		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	4	8	4	8	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	30	60	60	30	30	30	35	35	35	35	35	35
Amber [s]	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	84	84	10	81	81	40	46	40	46	40	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	22	22	0	22	22	16	16	16	16	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	4.10	4.10	4.00	4.00	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.10	0.00	2.00	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	85	78	85	73	47	47	36	36
g / C, Green / Cycle	0.47	0.43	0.47	0.41	0.26	0.26	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.09	0.42	0.03	0.32	0.11	0.18	0.03	0.14
s, saturation flow rate [veh/h]	949	1771	787	1775	1781	1748	1781	1806
c, Capacity [veh/h]	264	764	137	722	463	455	355	360
d1, Uniform Delay [s]	35.16	49.93	41.32	46.73	55.36	59.90	59.62	66.73
k, delay calibration	0.11	0.42	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	22.62	0.55	8.70	2.82	8.04	0.99	9.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.97	0.16	0.79	0.42	0.68	0.16	0.68
d, Delay for Lane Group [s/veh]	35.89	72.56	41.87	55.42	58.18	67.94	60.61	76.67
Lane Group LOS	D	E	D	E	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.25	37.13	0.55	24.33	7.88	13.87	2.34	11.59
50th-Percentile Queue Length [ft/ln]	56.13	928.27	13.70	608.32	196.90	346.78	58.44	289.68
95th-Percentile Queue Length [veh/ln]	4.04	47.12	0.99	32.42	12.48	19.98	4.21	17.17
95th-Percentile Queue Length [ft/ln]	101.04	1178.10	24.66	810.56	311.96	499.48	105.20	429.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.89	72.56	72.56	41.87	55.42	55.42	58.18	67.94	67.94	60.61	76.67	76.67
Movement LOS	D	E	E	D	E	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	68.65			54.92			64.16			73.60		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	64.65											
Intersection LOS	E											
Intersection V/C	0.753											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	79.34	79.34	79.34	79.34
l_p,int, Pedestrian LOS Score for Intersectio	2.466	2.401	2.274	2.226
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	881	848	460	393
d_b, Bicycle Delay [s]	28.18	29.95	53.90	58.28
l_b,int, Bicycle LOS Score for Intersection	2.923	2.540	2.395	2.060
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 28: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.781

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	21	340	101	19	240	36	162	239	14	22	205	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	340	101	19	240	36	162	239	14	22	205	77
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	95	28	5	67	10	45	67	4	6	57	21
Total Analysis Volume [veh/h]	23	379	113	21	268	40	181	267	16	25	229	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			2			9			3		
v_di, Inbound Pedestrian Volume crossing m	9			3			9			2		
v_co, Outbound Pedestrian Volume crossing	7			1			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			0			1			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			12			20			5		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	2	2	6	2	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	8	8	8	0	8	0	0	5	0	4	4	4
Maximum Green [s]	30	30	30	0	30	0	0	30	0	30	30	30
Amber [s]	3.2	3.2	3.2	0.0	3.2	0.0	0.0	3.0	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	30	30	0	30	0	0	0	0	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	2.5	2.5	2.5
Walk [s]	7	7	7	0	7	0	0	5	0	7	7	7
Pedestrian Clearance [s]	14	14	14	0	14	0	0	10	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.2	2.2	2.2	0.0	2.2	0.0	0.0	2.0	0.0	2.2	2.2	2.2
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	77	77	77	77
L, Total Lost Time per Cycle [s]	4.20	4.20	4.00	4.20
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.00	2.20
g_i, Effective Green Time [s]	25	25	22	17
g / C, Green / Cycle	0.33	0.33	0.29	0.22
(v / s)_i Volume / Saturation Flow Rate	0.29	0.19	0.25	0.19
s, saturation flow rate [veh/h]	1747	1754	1823	1784
c, Capacity [veh/h]	625	628	522	398
d1, Uniform Delay [s]	24.40	21.09	26.31	28.71
k, delay calibration	0.27	0.11	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.67	0.68	9.19	4.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.52	0.89	0.86
d, Delay for Lane Group [s/veh]	31.07	21.77	35.50	32.74
Lane Group LOS	C	C	D	C
Critical Lane Group	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	9.62	4.79	9.15	6.19
50th-Percentile Queue Length [ft/ln]	240.51	119.71	228.76	154.81
95th-Percentile Queue Length [veh/ln]	14.71	8.38	14.11	10.27
95th-Percentile Queue Length [ft/ln]	367.68	209.42	352.78	256.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.07	31.07	31.07	21.77	21.77	21.77	35.50	35.50	35.50	32.74	32.74	32.74
Movement LOS	C	C	C	C	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	31.07			21.77			35.50			32.74		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	30.80											
Intersection LOS	C											
Intersection V/C	0.781											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.15	29.89	28.15	28.15
l_p,int, Pedestrian LOS Score for Intersectio	2.133	2.013	2.072	2.065
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	782	782	782	782
d_b, Bicycle Delay [s]	14.35	14.32	14.37	14.27
l_b,int, Bicycle LOS Score for Intersection	2.409	2.102	2.325	2.121
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 29: El Camino Real (SR 82)/Encinal Ave-Menlo College Entrance

Control Type:	Signalized	Delay (sec / veh):	51.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.915

Intersection Setup

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Menlo College			Encinal Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	16	13	33	115	3	349	29	1469	112	321	1171	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.40	0.00	1.50	1.20	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	13	33	115	3	349	29	1469	112	321	1171	10
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	9	30	1	91	8	385	29	84	307	3
Total Analysis Volume [veh/h]	17	14	35	121	3	366	30	1540	117	336	1227	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			14			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	10	10	0	10	10	0
Maximum Green [s]	0	30	0	0	30	0	10	35	0	25	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	0	27	0	0	27	0	15	58	0	25	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	5.0	0.0	1.0	5.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	3.00	7.00	7.00	3.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	1.00	5.00	5.00	1.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	21	6	51	51	22	67	67
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.05	0.46	0.46	0.20	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.20	0.02	6.05	0.23	0.02	0.43	0.07	0.19	0.23	0.23
s, saturation flow rate [veh/h]	155	1590	21	1574	1810	3578	1565	1788	3583	1873
c, Capacity [veh/h]	80	304	69	301	99	1657	725	358	2181	1140
d1, Uniform Delay [s]	38.27	36.77	54.72	44.31	49.00	19.41	11.93	39.67	4.69	4.69
k, delay calibration	0.22	0.11	0.50	0.31	0.11	0.50	0.50	0.34	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.10	0.17	414.92	114.68	1.70	10.69	0.48	26.70	0.49	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.12	1.81	1.22	0.30	0.93	0.16	0.94	0.37	0.37
d, Delay for Lane Group [s/veh]	44.38	36.93	469.64	159.00	50.70	30.10	12.41	66.37	5.18	5.63
Lane Group LOS	D	D	F	F	D	C	B	E	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.85	0.82	9.80	17.68	0.82	16.61	1.28	10.97	2.14	2.38
50th-Percentile Queue Length [ft/ln]	21.14	20.48	245.10	442.07	20.61	415.23	32.07	274.34	53.42	59.41
95th-Percentile Queue Length [veh/ln]	1.52	1.47	17.65	27.01	1.48	23.29	2.31	16.41	3.85	4.28
95th-Percentile Queue Length [ft/ln]	38.05	36.87	441.18	675.17	37.10	582.32	57.73	410.16	96.15	106.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.38	44.38	36.93	469.64	469.64	159.00	50.70	30.10	12.41	66.37	5.33	5.63
Movement LOS	D	D	D	F	F	F	D	C	B	E	A	A
d_A, Approach Delay [s/veh]	40.43			237.61			29.24			18.37		
Approach LOS	D			F			C			B		
d_I, Intersection Delay [s/veh]	51.71											
Intersection LOS	D											
Intersection V/C	6.915											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.967	0.000	0.000	0.000
Crosswalk LOS	A	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	382	382	927	1109
d_b, Bicycle Delay [s]	36.05	36.05	15.93	10.93
l_b,int, Bicycle LOS Score for Intersection	1.669	2.368	2.951	2.425
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 30: El Camino Real (SR 82)/Glenwood Ave-Valparaiso Ave

Control Type:	Signalized	Delay (sec / veh):	35.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	205.00	100.00	130.00	120.00	100.00	100.00	190.00	100.00	105.00	180.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valparaiso Avenue			Glenwood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	277	207	99	57	230	44	120	1356	72	38	984	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	207	99	57	230	44	120	1356	72	38	984	195
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	55	26	15	61	12	32	357	19	10	259	51
Total Analysis Volume [veh/h]	292	218	104	60	242	46	126	1429	76	40	1037	205
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			1			9			2		
v_di, Inbound Pedestrian Volume crossing m	9			2			8			1		
v_co, Outbound Pedestrian Volume crossing	1			5			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			5			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			5			4			9		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	12	0	8	10	0	8	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.7	0.0	3.5	4.1	0.0
All red [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.5	3.5	0.0	0.5	3.5	0.0
Split [s]	0	35	0	0	35	0	20	70	0	20	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	16	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	2.2	0.0	2.0	2.6	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	4.20	4.20	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	1.50	1.50	1.50	1.50	1.50	1.50	2.20	2.20	2.00	2.60	2.60
g_i, Effective Green Time [s]	30	30	30	26	26	26	13	82	82	7	76	76
g / C, Green / Cycle	0.19	0.19	0.19	0.16	0.16	0.16	0.08	0.51	0.51	0.04	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.07	0.03	0.13	0.03	0.07	0.40	0.05	0.02	0.29	0.13
s, saturation flow rate [veh/h]	1781	1855	1517	1781	1870	1551	1781	3560	1539	1781	3560	1543
c, Capacity [veh/h]	332	345	282	290	305	253	148	1828	790	76	1685	731
d1, Uniform Delay [s]	61.75	61.72	56.79	58.10	64.49	57.82	70.23	19.19	12.71	73.99	20.76	17.26
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.50	3.33	0.80	0.35	4.69	0.34	12.45	3.41	0.24	5.53	1.69	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.75	0.37	0.21	0.79	0.18	0.85	0.78	0.10	0.53	0.62	0.28
d, Delay for Lane Group [s/veh]	65.24	65.04	57.59	58.45	69.18	58.16	82.68	22.60	12.95	79.52	22.45	18.22
Lane Group LOS	E	E	E	E	E	E	F	C	B	E	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.02	10.39	3.77	2.18	10.01	1.66	5.46	15.98	0.99	1.72	11.00	3.43
50th-Percentile Queue Length [ft/ln]	250.42	259.64	94.25	54.40	250.33	41.57	136.44	399.46	24.79	42.95	275.10	85.65
95th-Percentile Queue Length [veh/ln]	15.21	15.67	6.79	3.92	15.20	2.99	9.29	22.53	1.79	3.09	16.44	6.17
95th-Percentile Queue Length [ft/ln]	380.19	391.76	169.65	97.93	380.07	74.83	232.22	563.35	44.63	77.30	411.11	154.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.22	65.04	57.59	58.45	69.18	58.16	82.68	22.60	12.95	79.52	22.45	18.22
Movement LOS	E	E	E	E	E	E	F	C	B	E	C	B
d_A, Approach Delay [s/veh]	63.86			65.87			26.79			23.55		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	35.10											
Intersection LOS	D											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	72.26	72.26	72.26
l_p,int, Pedestrian LOS Score for Intersectio	2.449	2.299	3.019	2.977
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	356	784	779
d_b, Bicycle Delay [s]	54.26	54.23	29.64	29.96
l_b,int, Bicycle LOS Score for Intersection	2.573	2.134	2.905	2.617
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 31: El Camino Real (SR 82)/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.677

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	90.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	128	287	107	123	295	54	74	1301	112	84	1026	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	287	107	123	295	54	74	1301	112	84	1026	50
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	74	28	32	76	14	19	335	29	22	264	13
Total Analysis Volume [veh/h]	132	295	110	127	303	56	76	1338	115	86	1056	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	6			0			0			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			0			0			6		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	10			10			4			6		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	16	13	0	4	4	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	50	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.6	0.0	3.0	3.6	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	1.0	4.0	0.0	1.0	4.0	0.0	1.0	3.5	0.0	1.0	3.5	0.0
Split [s]	20	40	0	20	40	0	21	83	0	18	79	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	23	0	0	23	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0	2.0	2.6	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60	4.00	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60	2.00	2.60	2.60
g_i, Effective Green Time [s]	16	33	33	13	31	31	9	87	87	10	88	88
g / C, Green / Cycle	0.10	0.21	0.21	0.08	0.19	0.19	0.05	0.54	0.54	0.06	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.07	0.16	0.07	0.07	0.16	0.04	0.04	0.38	0.07	0.05	0.30	0.03
s, saturation flow rate [veh/h]	1781	1870	1553	1781	1870	1552	1781	3560	1553	1781	3560	1536
c, Capacity [veh/h]	179	389	323	149	357	296	96	1927	841	107	1949	841
d1, Uniform Delay [s]	70.03	59.69	54.01	72.48	62.60	54.37	72.05	4.36	3.66	72.79	12.66	9.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	3.06	0.62	12.88	5.65	0.31	13.49	2.09	0.34	13.03	1.09	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.76	0.34	0.85	0.85	0.19	0.79	0.69	0.14	0.80	0.54	0.06
d, Delay for Lane Group [s/veh]	75.87	62.75	54.63	85.36	68.25	54.68	85.54	6.45	3.99	85.82	13.74	10.12
Lane Group LOS	E	E	D	F	E	D	F	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.62	11.75	3.91	5.74	12.61	1.96	3.35	3.24	0.51	3.83	7.39	0.57
50th-Percentile Queue Length [ft/ln]	140.45	293.63	97.68	143.57	315.28	48.99	83.77	80.98	12.75	95.71	184.75	14.13
95th-Percentile Queue Length [veh/ln]	9.51	17.37	7.03	9.67	18.44	3.53	6.03	5.83	0.92	6.89	11.85	1.02
95th-Percentile Queue Length [ft/ln]	237.63	434.14	175.82	241.82	460.88	88.18	150.79	145.77	22.95	172.28	296.20	25.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.87	62.75	54.63	85.36	68.25	54.68	85.54	6.45	3.99	85.82	13.74	10.12
Movement LOS	E	E	D	F	E	D	F	A	A	F	B	B
d_A, Approach Delay [s/veh]	64.32			71.15			10.20			18.78		
Approach LOS	E			E			B			B		
d_I, Intersection Delay [s/veh]	28.60											
Intersection LOS	C											
Intersection V/C	0.677											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.26	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.356	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	405	405	942	892
d_b, Bicycle Delay [s]	51.20	51.20	22.46	24.65
l_b,int, Bicycle LOS Score for Intersection	2.446	2.362	2.821	2.544
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 32: El Camino Real (SR 82)/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			25.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Santa Cruz Avenue			Santa Cruz Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	56	25	129	158	55	50	0	1451	66	0	1116	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	25	129	158	55	50	0	1451	66	0	1116	84
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9500	0.9560	0.9560	0.9500	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	7	34	41	14	13	0	379	17	0	292	22
Total Analysis Volume [veh/h]	59	26	135	165	58	52	0	1518	69	0	1167	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			14			13			0		
v_di, Inbound Pedestrian Volume crossing m	0			13			14			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	14			12			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	3	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	11	0	0	10	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.6	0.0	0.0	4.1	0.0	0.0	4.1	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Split [s]	0	35	0	0	30	0	0	95	0	0	95	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	20	0	0	22	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	2.6	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.60	4.60	4.60	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60
g_i, Effective Green Time [s]	19	19	19	20	20	108	108	108	108
g / C, Green / Cycle	0.12	0.12	0.12	0.13	0.13	0.68	0.68	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.09	0.09	0.06	0.43	0.05	0.33	0.06
s, saturation flow rate [veh/h]	1781	1870	1528	1781	1696	3560	1523	3560	1589
c, Capacity [veh/h]	209	219	179	224	213	2402	1028	2402	1072
d1, Uniform Delay [s]	64.54	63.28	68.19	67.42	65.41	0.00	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	0.24	6.32	4.66	1.92	1.28	0.13	0.71	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.12	0.75	0.74	0.52	0.63	0.07	0.49	0.08
d, Delay for Lane Group [s/veh]	65.27	63.52	74.51	72.08	67.34	1.28	0.13	0.71	0.15
Lane Group LOS	E	E	E	E	E	A	A	A	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.26	0.97	5.68	6.88	4.37	0.43	0.04	0.24	0.04
50th-Percentile Queue Length [ft/ln]	56.58	24.35	142.08	171.91	109.35	10.65	0.90	5.89	1.12
95th-Percentile Queue Length [veh/ln]	4.07	1.75	9.59	11.18	7.80	0.77	0.06	0.42	0.08
95th-Percentile Queue Length [ft/ln]	101.85	43.84	239.82	279.42	195.10	19.17	1.62	10.60	2.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.27	63.52	74.51	72.08	67.34	67.34	0.00	1.28	0.13	0.00	0.71	0.15
Movement LOS	E	E	E	E	E	E		A	A		A	A
d_A, Approach Delay [s/veh]	70.73			70.18			1.23			0.67		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	11.28											
Intersection LOS	B											
Intersection V/C	0.623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.22	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.069	0.000	0.000
Crosswalk LOS	F	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	350	280	1092	1092
d_b, Bicycle Delay [s]	54.86	59.55	16.52	16.49
l_b,int, Bicycle LOS Score for Intersection	1.923	2.013	2.869	2.595
Bicycle LOS	A	B	C	B

Sequence

Ring 1	2	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: El Camino Real (SR 82)/Ravenswood Ave-Menlo Ave

Control Type:	Signalized	Delay (sec / veh):	44.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	240.00	100.00	135.00	320.00	100.00	100.00	240.00	100.00	65.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Menlo Avenue			Ravenswood Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	51	361	96	346	278	57	227	1389	547	138	1228	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	361	96	346	278	57	227	1389	547	138	1228	44
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	95	25	91	73	15	60	365	144	36	323	12
Total Analysis Volume [veh/h]	54	380	101	364	292	60	239	1461	575	145	1291	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			18			0			19		
v_di, Inbound Pedestrian Volume crossing m	0			19			0			18		
v_co, Outbound Pedestrian Volume crossing	16			6			6			15		
v_ci, Inbound Pedestrian Volume crossing mi	15			6			6			16		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	13			14			5			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.6
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	3	8	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	4	4	4	8	10	10	8	10	10
Maximum Green [s]	0	50	0	50	50	50	50	50	50	50	50	50
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	4.1	4.1	4.1	4.1	4.1	4.1
All red [s]	0.0	1.0	0.0	4.0	4.0	4.0	1.0	4.0	4.0	1.0	4.0	4.0
Split [s]	0	27	0	32	32	32	20	64	64	27	71	71
Vehicle Extension [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	4.0	4.0	2.0	4.0	4.0
Walk [s]	0	0	0	5	5	5	0	10	10	0	10	10
Pedestrian Clearance [s]	0	0	0	23	23	23	0	23	23	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	1.0	1.2	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	20.0	20.0	20.0	20.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	3.20	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.20	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	24	24	29	29	29	17	68	68	16	67	67
g / C, Green / Cycle	0.16	0.16	0.19	0.19	0.19	0.11	0.45	0.45	0.11	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.11	0.16	0.04	0.13	0.41	0.37	0.08	0.36	0.03
s, saturation flow rate [veh/h]	1852	1728	3459	1870	1458	1781	3560	1554	1781	3560	1534
c, Capacity [veh/h]	295	275	669	362	282	200	1619	707	188	1591	685
d1, Uniform Delay [s]	62.23	62.50	54.55	57.84	50.73	63.81	26.64	24.23	60.12	15.09	10.75
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.42	7.57	0.26	1.64	0.14	92.97	8.60	9.94	2.55	4.62	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.67	1.67	1.67
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.95	0.54	0.81	0.21	1.20	0.90	0.81	0.77	0.81	0.07
d, Delay for Lane Group [s/veh]	67.65	70.06	54.81	59.49	50.86	156.77	35.23	34.17	62.66	19.71	10.94
Lane Group LOS	E	E	D	E	D	F	D	C	E	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.76	10.48	6.27	10.80	1.93	12.50	21.73	15.59	5.07	9.97	0.47
50th-Percentile Queue Length [ft/ln]	268.96	262.00	156.87	269.97	48.17	312.52	543.33	389.65	126.72	249.15	11.66
95th-Percentile Queue Length [veh/ln]	16.14	15.79	10.38	16.19	3.47	19.64	29.38	22.06	8.76	15.14	0.84
95th-Percentile Queue Length [ft/ln]	403.44	394.73	259.57	404.71	86.71	490.91	734.47	551.51	219.02	378.58	20.98

Movement, Approach, & Intersection Results

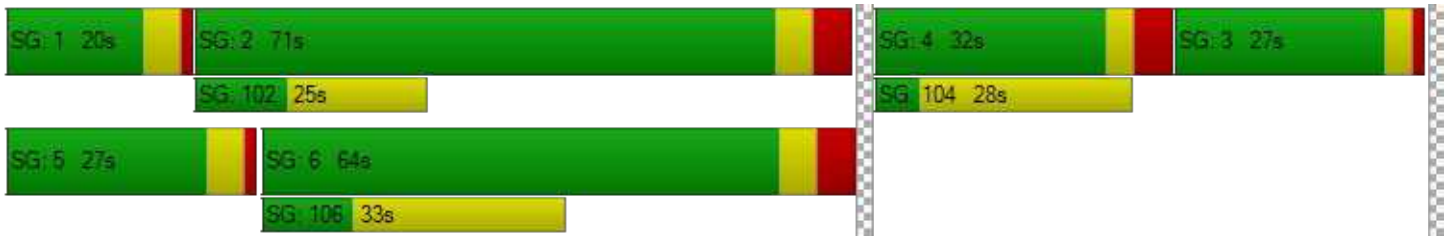
d_M, Delay for Movement [s/veh]	67.65	68.67	70.06	54.81	59.49	50.86	156.77	35.23	34.17	62.66	19.71	10.94
Movement LOS	E	E	E	D	E	D	F	D	C	E	B	B
d_A, Approach Delay [s/veh]	68.83			56.39			47.73			23.64		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	44.09											
Intersection LOS	D											
Intersection V/C	0.826											

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.66	61.66	0.00	66.28
l_p,int, Pedestrian LOS Score for Intersectio	2.324	2.771	0.000	3.058
Crosswalk LOS	B	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	307	333	745	839
d_b, Bicycle Delay [s]	54.12	52.46	29.60	25.30
l_b,int, Bicycle LOS Score for Intersection	2.001	2.741	3.436	2.782
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Version 2023 (SP 0-8)

Intersection Level Of Service Report

Intersection 34: El Camino Real (SR 82)/Roble Ave

Control Type:	Signalized	Delay (sec / veh):	11.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

Intersection Setup

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Roble Avenue			Roble Avenue			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	57	13	47	36	30	112	70	1751	20	123	1483	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	13	47	36	30	112	70	1751	20	123	1483	35
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	3	12	9	8	29	18	459	5	32	389	9
Total Analysis Volume [veh/h]	60	14	49	38	31	118	73	1837	21	129	1556	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			4			5		
v_di, Inbound Pedestrian Volume crossing m	5			4			4			6		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			16			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	4	8	4	8	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	12	8	12	8	12	8	10	10	10	4	10	10
Maximum Green [s]	50	50	50	50	50	50	50	50	50	50	50	50
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	4.1
All red [s]	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Split [s]	36	36	36	36	36	36	29	95	95	29	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	0	7	0	0	4	4	0	4	4
Pedestrian Clearance [s]	26	0	26	0	26	0	0	16	16	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	2.1	2.1
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	26	26	26	10	111	111	14	115	115
g / C, Green / Cycle	0.16	0.16	0.16	0.06	0.69	0.69	0.08	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.12	0.05	0.08	0.04	0.34	0.34	0.07	0.29	0.30
s, saturation flow rate [veh/h]	1025	1280	1535	1781	3560	1857	1781	3560	1844
c, Capacity [veh/h]	198	241	247	107	2463	1284	151	2549	1320
d1, Uniform Delay [s]	67.01	59.12	60.88	72.09	2.22	2.23	70.02	1.11	1.11
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.16	0.65	1.44	7.37	0.72	1.37	12.83	0.49	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.29	0.48	0.68	0.50	0.50	0.86	0.41	0.41
d, Delay for Lane Group [s/veh]	70.17	59.77	62.32	79.46	2.94	3.60	82.85	1.60	2.06
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.11	2.60	4.57	3.10	2.02	2.34	5.59	1.00	1.21
50th-Percentile Queue Length [ft/ln]	127.67	64.88	114.35	77.42	50.46	58.59	139.74	24.95	30.13
95th-Percentile Queue Length [veh/ln]	8.81	4.67	8.08	5.57	3.63	4.22	9.47	1.80	2.17
95th-Percentile Queue Length [ft/ln]	220.32	116.79	202.03	139.36	90.83	105.46	236.67	44.91	54.23

Movement, Approach, & Intersection Results

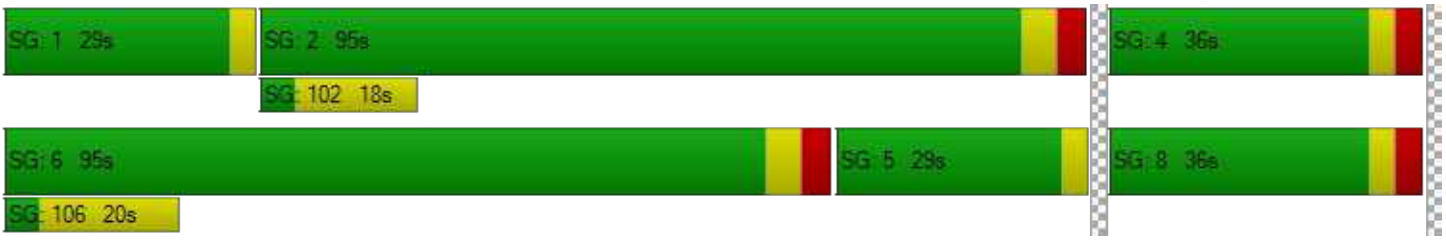
d_M, Delay for Movement [s/veh]	70.17	70.17	70.17	59.77	59.77	62.32	79.46	3.16	3.60	82.85	1.75	2.06
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	70.17			61.38			6.05			7.83		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	11.43											
Intersection LOS	B											
Intersection V/C	0.572											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.851	2.026	0.000	0.000
Crosswalk LOS	A	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	1099	1099
d_b, Bicycle Delay [s]	53.05	53.24	16.29	16.25
l_b,int, Bicycle LOS Score for Intersection	1.763	1.868	2.622	2.507
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 35: El Camino Real (SR 82)/Middle Ave

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name	Middle Avenue			Dwy			El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	249	0	183	0	1	3	270	1717	1	2	1386	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	249	0	183	0	1	3	270	1717	1	2	1386	121
Peak Hour Factor	0.9520	0.9900	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	0	48	0	0	1	71	451	0	1	364	32
Total Analysis Volume [veh/h]	262	0	192	0	1	3	284	1804	1	2	1456	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			7			4		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	8	0	0	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	5	0	0	10	0	4	10	0	4	10	0
Maximum Green [s]	50	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	4.1	0.0	3.0	4.1	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Split [s]	41	41	0	0	41	0	55	85	0	34	64	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	4	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	24	24	0	0	24	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.1	0.0	1.0	2.1	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	3.00	3.00	3.00	3.00	3.00	4.10	4.10	3.00	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	2.10	2.10	1.00	2.10	2.10
g_i, Effective Green Time [s]	36	36	36	36	28	113	113	0	86	86
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.17	0.71	0.71	0.00	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.19	0.12	0.00	0.00	0.16	0.33	0.33	0.00	0.30	0.30
s, saturation flow rate [veh/h]	1412	1592	1191	1651	1781	3560	1869	1781	3560	1783
c, Capacity [veh/h]	344	361	172	375	307	2519	1322	4	1913	958
d1, Uniform Delay [s]	61.07	54.36	0.00	47.92	60.57	1.48	1.48	79.64	13.63	13.67
k, delay calibration	0.17	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.51	1.21	0.00	0.01	11.53	0.63	1.20	61.56	1.14	2.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.53	0.00	0.01	0.92	0.47	0.47	0.46	0.55	0.55
d, Delay for Lane Group [s/veh]	66.59	55.57	0.00	47.93	72.11	2.11	2.68	141.20	14.78	15.97
Lane Group LOS	E	E	A	D	E	A	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.86	6.99	0.00	0.13	11.94	1.47	1.76	0.16	7.67	8.08
50th-Percentile Queue Length [ft/ln]	271.61	174.69	0.00	3.18	298.52	36.86	43.93	3.91	191.86	201.89
95th-Percentile Queue Length [veh/ln]	16.27	11.32	0.00	0.23	17.61	2.65	3.16	0.28	12.22	12.74
95th-Percentile Queue Length [ft/ln]	406.76	283.07	0.00	5.73	440.19	66.34	79.08	7.04	305.44	318.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.59	55.57	55.57	0.00	47.93	47.93	72.11	2.31	2.68	141.20	15.11	15.97
Movement LOS	E	E	E	A	D	D	E	A	A	F	B	B
d_A, Approach Delay [s/veh]	61.93			47.93			11.80			15.34		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	18.70											
Intersection LOS	B											
Intersection V/C	0.685											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	1.971	0.000	0.000
Crosswalk LOS	F	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	437	974	711
d_b, Bicycle Delay [s]	48.88	48.83	21.14	33.29
l_b,int, Bicycle LOS Score for Intersection	2.309	1.566	2.709	2.431
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 36: El Camino Real (SR 82)/Cambridge Ave

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

Intersection Setup

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			15.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Cambridge Avenue						El Camino Real (SR 82)			El Camino Real (SR 82)		
Base Volume Input [veh/h]	26	0	35	1	1	1	213	2038	2	25	1507	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	0	35	1	1	1	213	2038	2	25	1507	39
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	9	0	0	0	56	538	1	7	398	10
Total Analysis Volume [veh/h]	27	0	37	1	1	1	225	2152	2	26	1591	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			17			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - ECR
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	11	0	0	11	0	4	10	0	4	10	0
Maximum Green [s]	0	50	0	0	50	0	50	50	0	50	50	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	4.0	0.0	0.0	4.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Split [s]	0	40	0	0	40	0	35	105	0	15	85	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	4	0	0	4	0	0	4	0	0	4	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	12	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	22	132	132	3	112	112
g / C, Green / Cycle	0.08	0.08	0.08	0.14	0.82	0.82	0.02	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.00	0.13	0.40	0.40	0.01	0.30	0.30
s, saturation flow rate [veh/h]	1515	1589	1586	1781	3560	1869	1781	3560	1843
c, Capacity [veh/h]	173	134	164	247	2925	1535	34	2499	1293
d1, Uniform Delay [s]	68.10	68.66	67.17	64.26	0.00	0.00	77.62	1.69	1.69
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	1.10	0.04	12.40	0.57	1.09	29.20	0.54	1.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.28	0.02	0.91	0.48	0.48	0.77	0.43	0.43
d, Delay for Lane Group [s/veh]	68.52	69.76	67.22	76.66	0.57	1.09	106.82	2.24	2.74
Lane Group LOS	E	E	E	E	A	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.06	1.48	0.12	9.53	0.23	0.47	1.34	1.43	1.67
50th-Percentile Queue Length [ft/ln]	26.58	37.05	2.94	238.32	5.82	11.63	33.43	35.80	41.68
95th-Percentile Queue Length [veh/ln]	1.91	2.67	0.21	14.60	0.42	0.84	2.41	2.58	3.00
95th-Percentile Queue Length [ft/ln]	47.84	66.70	5.30	364.90	10.48	20.93	60.18	64.44	75.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.52	68.52	69.76	67.22	67.22	67.22	76.66	0.75	1.09	106.82	2.40	2.74
Movement LOS	E	E	E	E	E	E	E	A	A	F	A	A
d_A, Approach Delay [s/veh]	69.23			67.22			7.93			4.05		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	7.36											
Intersection LOS	A											
Intersection V/C	0.482											

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	8.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.059	1.751	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	412	412	1225	975
d_b, Bicycle Delay [s]	50.41	50.41	12.12	21.03
l_b,int, Bicycle LOS Score for Intersection	1.665	1.565	2.868	2.472
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: Santa Cruz Ave/University Dr (S)

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

Intersection Setup

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	60.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Santa Cruz Avenue		Santa Cruz Avenue		University Drive	
Base Volume Input [veh/h]	326	332	252	360	351	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.90	0.50	2.30	0.00	0.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	326	332	252	360	351	90
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	95	72	103	101	26
Total Analysis Volume [veh/h]	374	381	289	413	403	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	15		0		16	
v_ci, Inbound Pedestrian Volume crossing mi	16		0		15	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		15		8	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	0
Maximum Green [s]	30	30	15	40	25	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	30	0	30	0	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	0	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	16	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	0.0
Minimum Recall	Yes		Yes	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	49	49	49	49	49	49
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	14	14	10	28	13	13
g / C, Green / Cycle	0.29	0.29	0.20	0.57	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.20	0.25	0.16	0.22	0.22	0.07
s, saturation flow rate [veh/h]	1861	1505	1802	1865	1810	1557
c, Capacity [veh/h]	532	430	354	1056	483	416
d1, Uniform Delay [s]	15.66	16.41	18.85	5.93	16.95	14.08
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	2.49	1.76	0.09	1.48	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.89	0.82	0.39	0.83	0.25
d, Delay for Lane Group [s/veh]	16.30	18.91	20.61	6.02	18.43	14.19
Lane Group LOS	B	B	C	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.29	3.71	3.02	1.75	3.87	0.79
50th-Percentile Queue Length [ft/ln]	82.21	92.69	75.40	43.64	96.69	19.80
95th-Percentile Queue Length [veh/ln]	5.92	6.67	5.43	3.14	6.96	1.43
95th-Percentile Queue Length [ft/ln]	147.97	166.84	135.71	78.54	174.04	35.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.30	18.91	20.61	6.02	18.43	14.19
Movement LOS	B	B	C	A	B	B
d_A, Approach Delay [s/veh]	17.61		12.03		17.57	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	15.60					
Intersection LOS	B					
Intersection V/C	0.693					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	25.9
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	16.28	5.41
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.229	2.247
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1227	1636	1022
d_b, Bicycle Delay [s]	3.67	0.82	5.86
l_b,int, Bicycle LOS Score for Intersection	2.805	2.718	1.560
Bicycle LOS	C	B	A

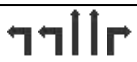
Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: Sand Hill Rd/Santa Cruz Ave

Control Type:	Signalized	Delay (sec / veh):	43.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	210.00	100.00	240.00	135.00	100.00	140.00	100.00	100.00	100.00	150.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Sand Hill Road			Sand Hill Road			Santa Cruz Avenue			Santa Cruz Avenue		
Base Volume Input [veh/h]	339	603	144	327	981	158	291	816	253	146	728	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	603	144	327	981	158	291	816	253	146	728	166
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	159	38	86	258	42	76	215	67	38	191	44
Total Analysis Volume [veh/h]	356	634	151	344	1032	166	306	858	266	154	766	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			6			6			0		
v_di, Inbound Pedestrian Volume crossing m	0			6			6			1		
v_co, Outbound Pedestrian Volume crossing	2			1			3			2		
v_ci, Inbound Pedestrian Volume crossing mi	3			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	28			9			33			20		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	8	8	4	8	8	8	8	8	8	8	8
Maximum Green [s]	30	60	60	30	60	60	25	30	30	25	30	30
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All red [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	20	44	44	20	44	44	20	40	40	16	36	36
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	0	7	7	0	7	7
Pedestrian Clearance [s]	0	24	24	0	24	24	0	24	24	0	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.6	3.6	2.0	3.6	3.6	2.1	3.6	3.6	2.1	3.6	3.6
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.60	5.60	4.00	5.60	5.60	4.10	5.60	5.60	4.10	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.60	3.60	2.00	3.60	3.60	2.10	3.60	3.60	2.10	3.60	3.60
g_i, Effective Green Time [s]	14	45	45	14	45	45	13	32	32	10	29	29
g / C, Green / Cycle	0.12	0.38	0.38	0.12	0.37	0.37	0.11	0.27	0.27	0.08	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.10	0.10	0.29	0.11	0.09	0.24	0.18	0.04	0.22	0.11
s, saturation flow rate [veh/h]	3459	3560	1538	3459	3560	1558	3459	3560	1506	3459	3560	1539
c, Capacity [veh/h]	416	1337	578	406	1327	581	369	947	401	278	853	369
d1, Uniform Delay [s]	51.83	28.50	25.88	51.96	33.29	26.40	52.60	42.66	38.89	53.19	44.28	39.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.14	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	1.21	1.10	4.92	4.54	1.24	4.80	3.65	2.41	1.73	3.72	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.47	0.26	0.85	0.78	0.29	0.83	0.91	0.66	0.55	0.90	0.47
d, Delay for Lane Group [s/veh]	56.94	29.71	26.98	56.88	37.82	27.63	57.40	46.31	41.30	54.91	48.00	40.00
Lane Group LOS	E	C	C	E	D	C	E	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.50	7.05	3.13	5.31	13.76	3.50	4.73	12.56	7.10	2.29	11.30	4.47
50th-Percentile Queue Length [ft/ln]	137.58	176.20	78.21	132.71	344.03	87.41	118.19	313.97	177.38	57.25	282.59	111.87
95th-Percentile Queue Length [veh/ln]	9.35	11.40	5.63	9.09	19.84	6.29	8.29	18.37	11.46	4.12	16.82	7.94
95th-Percentile Queue Length [ft/ln]	233.76	285.04	140.78	227.18	496.12	157.34	207.33	459.26	286.59	103.04	420.43	198.60

Movement, Approach, & Intersection Results

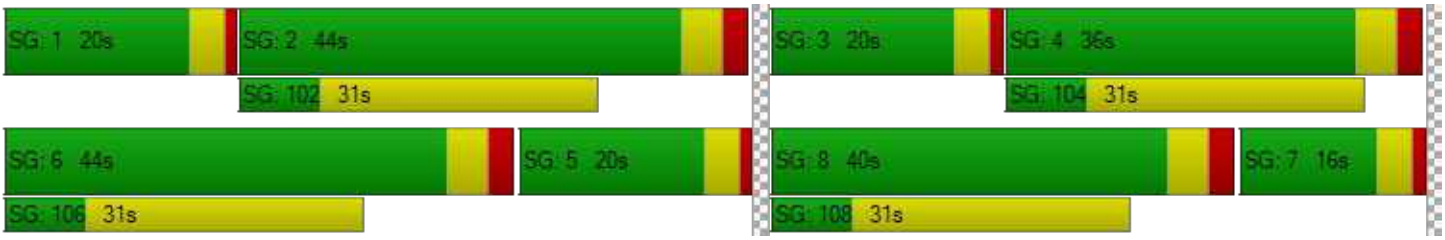
d_M, Delay for Movement [s/veh]	56.94	29.71	26.98	56.88	37.82	27.63	57.40	46.31	41.30	54.91	48.00	40.00
Movement LOS	E	C	C	E	D	C	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	37.84			40.98			47.75			47.69		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.56											
Intersection LOS	D											
Intersection V/C	0.760											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.55	49.55	49.55	49.55
l_p,int, Pedestrian LOS Score for Intersectio	3.039	3.108	3.045	3.010
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	573	506
d_b, Bicycle Delay [s]	28.18	27.91	31.08	33.83
l_b,int, Bicycle LOS Score for Intersection	2.501	2.832	2.739	2.463
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: Bay Rd/Ringwood Ave/Sonoma Ave

Control Type:	All-way stop	Delay (sec / veh):	49.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.020

Intersection Setup

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Ringwood Avenue				Sonoma Avenue				Bay Road			
Base Volume Input [veh/h]	0	148	17	248	0	6	23	6	0	2	190	338
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	148	17	248	0	6	23	6	0	2	190	338
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	40	5	67	0	2	6	2	0	1	51	91
Total Analysis Volume [veh/h]	0	159	18	266	0	6	25	6	0	2	204	363
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	544	406	569
Degree of Utilization, x	0.81	0.09	1.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.05	0.30	15.31
95th-Percentile Queue Length [ft]	201.36	7.48	382.81
Approach Delay [s/veh]	32.51	12.76	68.49
Approach LOS	D	B	F
Intersection Delay [s/veh]	49.75		
Intersection LOS	E		

Intersection Setup

Name	Bay Road				Ringwood Avenue			
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right2	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				25.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Bay Road				Ringwood Avenue			
Base Volume Input [veh/h]	136	297	8	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	297	8	0	0	0	0	0
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	80	2	0	0	0	0	0
Total Analysis Volume [veh/h]	146	319	9	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	522	404
Degree of Utilization, x	0.91	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	10.67	0.00
95th-Percentile Queue Length [ft]	266.84	0.00
Approach Delay [s/veh]	46.24	0.00
Approach LOS	E	A
Intersection Delay [s/veh]	49.75	
Intersection LOS	E	

Intersection Level Of Service Report
Intersection 88: Valparaiso Ave/ University Dr

Control Type:	Signalized	Delay (sec / veh):	56.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	35.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Valparaiso Ave			Valparaiso Ave			University Drive (North)			University Drive		
Base Volume Input [veh/h]	60	414	325	43	439	67	220	19	45	53	30	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	414	325	43	439	67	220	19	45	53	30	58
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	120	94	13	128	19	64	6	13	15	9	17
Total Analysis Volume [veh/h]	70	481	378	50	510	78	256	22	52	62	35	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			5			0			6		
v_ci, Inbound Pedestrian Volume crossing mi	0			6			0			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	11			7			1			8		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	0	0	4	0	0	4	0
Maximum Green [s]	25	30	0	25	30	0	0	30	0	0	30	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C
C, Cycle Length [s]	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	30	36	30	24	24	24
g / C, Green / Cycle	0.53	0.43	0.53	0.43	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.50	0.06	0.32	0.31	0.05	0.06
s, saturation flow rate [veh/h]	957	1710	782	1816	1081	1326	1642
c, Capacity [veh/h]	436	743	290	776	462	116	561
d1, Uniform Delay [s]	10.81	19.53	14.96	16.75	24.07	15.93	15.96
k, delay calibration	0.23	0.50	0.11	0.33	0.23	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	85.13	0.28	4.55	4.39	3.75	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	1.16	0.17	0.76	0.71	0.53	0.18
d, Delay for Lane Group [s/veh]	11.18	104.66	15.24	21.30	28.46	19.67	16.11
Lane Group LOS	B	F	B	C	C	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.48	27.76	0.33	7.85	5.49	0.78	1.11
50th-Percentile Queue Length [ft/ln]	11.97	693.95	8.23	196.14	137.34	19.48	27.71
95th-Percentile Queue Length [veh/ln]	0.86	40.22	0.59	12.44	9.34	1.40	2.00
95th-Percentile Queue Length [ft/ln]	21.54	1005.50	14.82	310.99	233.44	35.06	49.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.18	104.66	104.66	15.24	21.30	21.30	28.46	28.46	28.46	19.67	16.11	16.11
Movement LOS	B	F	F	B	C	C	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	97.62			20.83			28.46			17.46		
Approach LOS	F			C			C			B		
d_I, Intersection Delay [s/veh]	56.39											
Intersection LOS	E											
Intersection V/C	0.873											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	-4.0	0.0	-5.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	38.68	0.00	39.75
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.500	0.000	2.081
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	868	868	868	868
d_b, Bicycle Delay [s]	11.14	11.11	11.08	11.12
l_b,int, Bicycle LOS Score for Intersection	3.092	2.612	2.104	1.830
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 107: Alpine Rd/Santa Cruz Ave&Junipero Serra Blvd

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Approach	Southbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	210.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Santa Cruz Avenue		Junipero Serra Blvd		Alpine Road	
Base Volume Input [veh/h]	418	773	425	632	654	139
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	418	773	425	632	654	139
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	197	108	161	167	35
Total Analysis Volume [veh/h]	427	789	434	645	667	142
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	29		41		20	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Overlap	Split	Split
Signal Group	0	4	6	4	8	0
Auxiliary Signal Groups				4,6		
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	10	7	10	8	0
Maximum Green [s]	0	40	30	40	50	0
Amber [s]	0.0	3.6	3.1	3.6	3.9	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	38	48	44	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	2.1	2.6	2.9	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	No	No	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.60	4.60	4.60	4.10	4.60	4.90	4.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	2.60	2.10	0.00	2.90	2.90
g_i, Effective Green Time [s]	35	35	35	53	92	28	28
g / C, Green / Cycle	0.27	0.27	0.27	0.41	0.71	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.22	0.24	0.41	0.19	0.09
s, saturation flow rate [veh/h]	1781	1862	1870	1781	1566	3560	1538
c, Capacity [veh/h]	483	505	507	726	1111	772	333
d1, Uniform Delay [s]	44.36	44.33	44.32	30.16	9.20	49.07	43.79
k, delay calibration	0.21	0.20	0.20	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.31	5.94	5.91	3.61	2.21	3.05	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.81	0.81	0.60	0.58	0.86	0.43
d, Delay for Lane Group [s/veh]	50.67	50.26	50.23	33.78	11.41	52.11	44.65
Lane Group LOS	D	D	D	C	B	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	12.70	13.18	13.23	11.34	8.91	10.75	4.04
50th-Percentile Queue Length [ft/ln]	317.44	329.57	330.70	283.48	222.78	268.81	101.03
95th-Percentile Queue Length [veh/ln]	18.54	19.14	19.19	16.86	13.81	16.13	7.27
95th-Percentile Queue Length [ft/ln]	463.54	478.44	479.82	421.54	345.18	403.26	181.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.65	50.25	33.78	11.41	52.11	44.65
Movement LOS	D	D	C	B	D	D
d_A, Approach Delay [s/veh]	50.38		20.41		50.80	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	40.07					
Intersection LOS	D					
Intersection V/C	0.764					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	521	601
d_b, Bicycle Delay [s]	29.28	36.27	32.11
l_b,int, Bicycle LOS Score for Intersection	2.563	1.560	2.227
Bicycle LOS	B	A	B

Sequence

Ring 1	-	6	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 110: Marsh Road/101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	23.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.924

Intersection Setup

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	2165	0	0	1547	605	599
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2165	0	0	1547	605	599
Peak Hour Factor	0.9550	1.0000	1.0000	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	567	0	0	405	158	157
Total Analysis Volume [veh/h]	2267	0	0	1620	634	627
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	100	0	0	100	100	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	70	0	0	70	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	Yes	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	68	68	28	28
g / C, Green / Cycle	0.67	0.67	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.64	0.45	0.18	0.22
s, saturation flow rate [veh/h]	3560	3560	3459	2813
c, Capacity [veh/h]	2401	2401	971	790
d1, Uniform Delay [s]	14.64	9.76	31.73	33.34
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.28	1.54	3.41	8.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.67	0.65	0.79
d, Delay for Lane Group [s/veh]	23.92	11.30	35.14	41.40
Lane Group LOS	C	B	D	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	22.33	9.67	7.11	7.79
50th-Percentile Queue Length [ft/ln]	558.17	241.85	177.68	194.81
95th-Percentile Queue Length [veh/ln]	30.08	14.78	11.48	12.37
95th-Percentile Queue Length [ft/ln]	751.90	369.38	286.98	309.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.92	0.00	0.00	11.30	35.14	41.40
Movement LOS	C			B	D	D
d_A, Approach Delay [s/veh]	23.92		11.30		38.25	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	23.46					
Intersection LOS	C					
Intersection V/C	0.924					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	41.46	39.66
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.238	2.443
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1307	1307	515
d_b, Bicycle Delay [s]	6.02	6.04	27.58
l_b,int, Bicycle LOS Score for Intersection	3.430	2.896	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 115: Orange Ave/Santa Cruz Ave

Control Type:	All-way stop	Delay (sec / veh):	35.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.013

Intersection Setup

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Avy Avenue			Santa Cruz Avenue			Santa Cruz Avenue			Orange Avenue		
Base Volume Input [veh/h]	9	178	15	400	192	21	20	197	339	11	194	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	178	15	400	192	21	20	197	339	11	194	6
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	48	4	109	52	6	5	53	92	3	53	2
Total Analysis Volume [veh/h]	10	193	16	434	208	23	22	214	368	12	211	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	394	419	434	461	449	494	428
Degree of Utilization, x	0.03	0.50	1.01	0.50	0.53	0.74	0.54

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	2.71	13.10	2.75	2.99	6.26	3.09
95th-Percentile Queue Length [ft]	1.95	67.78	327.46	68.82	74.77	156.56	77.32
Approach Delay [s/veh]	19.23		55.80		24.78		20.73
Approach LOS	C		F		C		C
Intersection Delay [s/veh]	35.54						
Intersection LOS	E						

Intersection Level Of Service Report
Intersection 165: Willow Rd/US-101 SB Ramps

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1299	370	0	1084	782	0	0	0	782	0	360
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1299	370	0	1084	782	0	0	0	782	0	360
Peak Hour Factor	1.0000	0.9520	0.9520	1.0000	0.9520	0.9520	1.0000	1.0000	1.0000	0.9520	1.0000	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	341	97	0	285	205	0	0	0	205	0	95
Total Analysis Volume [veh/h]	0	1364	389	0	1139	821	0	0	0	821	0	378
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	112	0	0	112	0	0	0	0	33	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	108	108	108		29	29
g / C, Green / Cycle	0.74	0.74	0.74		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.27	0.22	0.53		0.24	0.13
s, saturation flow rate [veh/h]	5094	5094	1550		3459	2813
c, Capacity [veh/h]	3793	3793	1154		692	563
d1, Uniform Delay [s]	6.45	6.08	9.77		57.92	53.51
k, delay calibration	0.50	0.50	0.50		0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.27	0.20	3.74		87.97	1.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.30	0.71		1.19	0.67
d, Delay for Lane Group [s/veh]	6.72	6.29	13.51		145.89	54.91
Lane Group LOS	A	A	B		F	D
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.68	3.69	13.75		21.15	6.51
50th-Percentile Queue Length [ft/ln]	117.09	92.16	343.78		528.65	162.74
95th-Percentile Queue Length [veh/ln]	8.23	6.64	19.83		31.30	10.69
95th-Percentile Queue Length [ft/ln]	205.82	165.88	495.81		782.40	267.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.72	0.00	0.00	6.29	13.51	0.00	0.00	0.00	145.89	0.00	54.91
Movement LOS		A			A	B				F		D
d_A, Approach Delay [s/veh]	5.28			9.31			0.00			117.21		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	36.70											
Intersection LOS	D											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.74	0.00	63.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.019	0.000	1.447	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1491	1491	0	400
d_b, Bicycle Delay [s]	4.70	4.72	72.46	46.36
l_b,int, Bicycle LOS Score for Intersection	2.310	2.638	4.132	1.560
Bicycle LOS	B	B	D	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 168: Willow Rd/US-101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	87.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

Intersection Setup

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1411	730	0	1333	852	0	0	0	432	0	849
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1411	730	0	1333	852	0	0	0	432	0	849
Peak Hour Factor	1.0000	0.9330	0.9330	1.0000	0.9330	0.9330	1.0000	1.0000	1.0000	0.9330	1.0000	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	378	196	0	357	228	0	0	0	116	0	227
Total Analysis Volume [veh/h]	0	1512	782	0	1429	913	0	0	0	463	0	910
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	2.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Overlap	Unsigna	Permiss	Permiss	Permiss	Split	Split	Overlap
Signal Group	0	2	0	0	6	0	0	0	0	7	0	8
Auxiliary Signal Groups					6,8							7,8
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	5
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	30
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	1.0
Split [s]	0	95	0	0	95	0	0	0	0	25	0	25
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Minimum Recall		No			No					No		No
Maximum Recall		No			No					No		No
Pedestrian Recall		No			No					No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C		L	R
C, Cycle Length [s]	145	145	145		145	145
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00		2.00	0.00
g_i, Effective Green Time [s]	91	91	116		21	46
g / C, Green / Cycle	0.63	0.63	0.80		0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.50	0.50	0.48		0.13	0.55
s, saturation flow rate [veh/h]	3003	1556	3003		3459	1658
c, Capacity [veh/h]	1886	977	2401		502	525
d1, Uniform Delay [s]	20.18	19.72	5.54		61.14	49.51
k, delay calibration	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	3.70	6.85	1.10		7.61	337.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.80	0.60		0.92	1.73
d, Delay for Lane Group [s/veh]	23.88	26.57	6.64		68.74	387.25
Lane Group LOS	C	C	A		E	F
Critical Lane Group	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	12.93	20.48	4.95		8.96	34.09
50th-Percentile Queue Length [ft/ln]	323.17	512.01	123.65		224.02	852.30
95th-Percentile Queue Length [veh/ln]	18.82	27.90	8.59		13.87	55.79
95th-Percentile Queue Length [ft/ln]	470.59	697.56	214.83		346.75	1394.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.88	26.57	0.00	6.64	0.00	0.00	0.00	0.00	68.74	0.00	387.25
Movement LOS		C	C		A					E		F
d_A, Approach Delay [s/veh]	24.80			4.16			0.00			279.84		
Approach LOS	C			A			A			F		
d_I, Intersection Delay [s/veh]	87.73											
Intersection LOS	F											
Intersection V/C	0.716											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	63.75	63.75	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.154	1.447	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1601	0	290
d_b, Bicycle Delay [s]	10.05	2.90	72.47	52.99
l_b,int, Bicycle LOS Score for Intersection	2.821	2.346	4.132	1.560
Bicycle LOS	C	B	D	A

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 2023 (SP 0-8)

Intersection Level Of Service Report
Intersection 224: Willow Rd/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

Intersection Setup

Name	Willow Road		Willow Road		Laurel Street	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Willow Road		Willow Road		Laurel Street	
Base Volume Input [veh/h]	15	272	82	137	158	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	272	82	137	158	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	74	22	37	43	2
Total Analysis Volume [veh/h]	16	296	89	149	172	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	622	682	783	665
Degree of Utilization, x	0.03	0.43	0.30	0.27

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.08	2.20	1.29	1.09
95th-Percentile Queue Length [ft]	1.98	55.06	32.16	27.36
Approach Delay [s/veh]	11.80		9.60	10.42
Approach LOS	B		A	B
Intersection Delay [s/veh]	10.74			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 250: Ravesnwood Avenue and Proj Dwy B1 West

Control Type:	Two-way stop	Delay (sec / veh):	26.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.282

Intersection Setup

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Avenue		Ravenswood Ave		Proj Dwy B1 West	
Base Volume Input [veh/h]	597	41	13	435	67	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	597	41	13	435	67	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	10	3	109	17	7
Total Analysis Volume [veh/h]	597	41	13	435	67	28
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.28	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	8.82	0.00	26.62	18.81
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.02	1.45	1.45
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.55	0.55	36.24	36.24
d_A, Approach Delay [s/veh]	0.00		0.26		24.32	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.05					
Intersection LOS	D					

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Intersection Level Of Service Report

Intersection 251: Ravesnwood Ave and Proj Dwy B1 East

Control Type:	Two-way stop	Delay (sec / veh):	22.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.128

Intersection Setup

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Ravenswood Ave		Ravenswood Avenue		Proj Dwy B1 East	
Base Volume Input [veh/h]	608	68	0	412	32	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	608	68	0	412	32	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	17	0	103	8	9
Total Analysis Volume [veh/h]	608	68	0	412	32	34
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.13	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	8.93	0.00	22.08	15.29
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.73	0.73
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	18.30	18.30
d_A, Approach Delay [s/veh]	0.00		0.00		18.58	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.06					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 254: Laurel Street and Glenwood Ave

Control Type:	All-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	73	192	34	8	176	9	59	108	9	3	285	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	192	34	8	176	9	59	108	9	3	285	14
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	52	9	2	48	2	16	29	2	1	77	4
Total Analysis Volume [veh/h]	79	209	37	9	191	10	64	117	10	3	310	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	600	576	566	600
Degree of Utilization, x	0.54	0.36	0.34	0.55

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.24	1.66	1.48	3.30
95th-Percentile Queue Length [ft]	81.11	41.54	37.04	82.51
Approach Delay [s/veh]	15.88	12.80	12.57	16.01
Approach LOS	C	B	B	C
Intersection Delay [s/veh]	14.71			
Intersection LOS	B			

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Intersection Level Of Service Report

Intersection 255: Encinal Ave and Laurel Street

Control Type:	All-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Encinal Avenue		Encinal Avenue		Laurel Street	
Base Volume Input [veh/h]	232	201	96	183	167	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	201	96	183	167	46
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	56	27	51	46	13
Total Analysis Volume [veh/h]	258	223	107	203	186	51
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	739	666	610
Degree of Utilization, x	0.65	0.47	0.39

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.87	2.48	1.84
95th-Percentile Queue Length [ft]	121.66	61.95	45.92
Approach Delay [s/veh]	16.50	13.04	12.62
Approach LOS	C	B	B
Intersection Delay [s/veh]	14.56		
Intersection LOS	B		

Intersection Level Of Service Report
Intersection 292: Ravesnwood Ave/Proje Dwy/Pine Street

Control Type:	Two-way stop	Delay (sec / veh):	31.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ravenswood Avenue			Ravenswood Avenue			Project Dwy			Pine Street		
Base Volume Input [veh/h]	9	612	0	0	467	7	0	0	0	5	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	612	0	0	467	7	0	0	0	5	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	165	0	0	126	2	0	0	0	1	0	5
Total Analysis Volume [veh/h]	10	658	0	0	502	8	0	0	0	5	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.75	0.00	0.00	0.58	0.01	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	31.85	23.14	22.36	35.07	15.00	14.14	7.25	0.00	0.00	7.23	0.00	0.00
Movement LOS	D	C	C	E	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	8.25	8.25	8.25	3.97	3.97	3.97	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	206.24	206.24	206.24	99.15	99.15	99.15	0.00	0.00	0.00	0.25	0.25	0.25
d_A, Approach Delay [s/veh]	23.27			14.98			2.42			1.51		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	19.32											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 293: Laurel Street and Burgess Dr

Control Type:	All-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Burgess Dr			Burgess Dr			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	55	2	38	5	0	2	12	316	4	3	262	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	2	38	5	0	2	12	316	4	3	262	24
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	1	12	2	0	1	4	96	1	1	80	7
Total Analysis Volume [veh/h]	67	2	46	6	0	2	15	385	5	4	320	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	644	603	761	760
Degree of Utilization, x	0.18	0.01	0.53	0.46

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.65	0.04	3.18	2.48
95th-Percentile Queue Length [ft]	16.16	1.01	79.50	62.10
Approach Delay [s/veh]	9.81	9.05	12.96	11.79
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	12.05			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 295: Laurel Street and Proj Dwy N

Control Type:	Two-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Proj Dwy N		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy N		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	0	0	443	20	12	333
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	443	20	12	333
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	111	5	3	83
Total Analysis Volume [veh/h]	0	0	443	20	12	333
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	15.44	10.93	0.00	0.00	8.29	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.50	0.50
d_A, Approach Delay [s/veh]	13.19		0.00		0.29	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.12					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 296: Laurel Street and Proj Dwy S

Control Type:	All-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	Proj Dwy S		Laurel Street		Laurel Street	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Proj Dwy S		Laurel Street		Laurel Street	
Base Volume Input [veh/h]	1	2	427	2	2	320
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	2	427	2	2	320
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	107	1	1	80
Total Analysis Volume [veh/h]	1	2	427	2	2	320
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	693	845	825
Degree of Utilization, x	0.00	0.51	0.39

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	2.93	1.86
95th-Percentile Queue Length [ft]	0.33	73.24	46.60
Approach Delay [s/veh]	8.22	11.57	10.13
Approach LOS	A	B	B
Intersection Delay [s/veh]	10.94		
Intersection LOS	B		

Appendix 3

Biosafety Management White Paper

Santa Rosa
(707) 571-8961

San Francisco
(415) 287-0056

Harris & Lee Environmental Sciences, LLC

Mark Murray
Lane Partners
644 Menlo Avenue, 2nd Floor
Menlo Park, CA 94025

August 26, 2024

RE: Biosafety Management for the Parkline Project in Menlo Park

Dear Mark,

Thank you for the opportunity to provide this White Paper to explain the current status of the biosafety practices and regulatory framework in the San Francisco Bay Area, including San Mateo County ("SMC"). The White Paper is intended to present the state of current regulatory oversight of biosafety in general, as well as provide a view of actual practice within the private sector of biopharmaceutical operations, particularly those in mixed-use (residential and commercial/industrial) areas.

I have worked in the private biopharmaceutical business sector for 25 years. From 1999 to mid-2006, I was the Associate Director of Occupational Safety and Industrial Hygiene in the Environmental Health & Safety ("EHS") department for the former Chiron Corp, a multinational R&D and manufacturing company making several biologically-derived drugs (Chiron was fully absorbed by Novartis in 2006). Chiron's headquarters site, in Emeryville, CA, operated numerous chemical and biological laboratories, including a BSL-3 laboratory in a densely populated, mixed-use area with success. For the last 18 years, I and my team of consultants have been providing EHS support services to the private biopharmaceutical business sector. A large portion of our work in this sector is based in SMC where we have dozens of biopharmaceutical clients. In addition, we have clients in Alameda County, the City and County of San Francisco, Santa Clara County, and more. Additionally, and important to the Parkline Project, I have helped support construction safety, hazard exposure assessment and control and life sciences compliance in the mixed-use area of Mission Bay South. The attached White Paper is a summary of my knowledge and experience in this industry and its application to the Parkline Project.

Sincerely,

Patricia Beach

Patricia Beach, MS, CIH
Managing Partner/Principal Consultant
Harris & Lee Environmental Sciences, LLC

BOARD FOR GLOBAL EHS CREDENTIALING INCORPORATED
CERTIFICATE NO. 8494 CP
EXPIRES 12-1-28
PENNSYLVANIA 1985
PATRICIA A. BEACH, CIH

The Parkline project presents aspects of development in Menlo Park and the Peninsula that are new. Namely, the mixed use and zoning for both residential and research laboratories (commercial/industrial) in the same area understandably raises public health questions and concerns. In particular, members of the public have expressed concerns about the presence of biological research labs within ¼ mile of residential uses. However, mixed-use zoning of residential and biological research is not new to the Bay Area. Below, the following topics are discussed in order to shed light on how mixed-use zoning can be successfully managed:

1) Regulatory Frameworks for Biosafety Hazard Management
2) Management of Animal Research Concerns
3) Hazard Control through Design – Bay Area Examples

1) Regulatory Background for Biosafety Hazard Management

With regard to naturally occurring micro-organisms, and their use in research in laboratory settings, the Center for Disease Control and Prevention (CDC) provides a wealth of information and guidance in its Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th edition (CDC, 2020). The BMBL was first published in 1984 and quickly became the cornerstone for biosafety practice and policy in the U.S. Also in 1984, the Association for Biosafety and Biosecurity (ABSA International) was founded. ABSA International promotes biosafety as a scientific discipline and serves the growing needs of biosafety professionals throughout the world.

The concerns for community exposure through the release of altered bio-organisms from research labs emerged as a unique public health concern in the 1970's when the ability to alter and engineer micro-organism DNA, by either recombinant or synthetic means[1] (referred to as rDNA), became more common and use in research spread widely. Biological risk emerged as a serious topic of public concern. The primary concern was then, and still is, the potential for these engineered molecules to combine with naturally-occurring DNA in either humans, animals or the natural environment to cause unknown harm. As a result of this emerging risk, the National Institutes of Health (NIH) published the first Guidelines for Recombinant DNA Research in June 1976. The Guidelines are updated regularly and oversight is provided by the NIH's Recombinant DNA Advisory Committee or RAC. The R&D activities surrounding altered and engineered DNA in microorganisms has been the driver of many of the modern life-saving treatments and production of drugs within the biotechnology and biopharmaceutical industry.

In the U.S., the BMBL and the NIH Guidelines go hand-in-hand as the standards of practice for exposure control for both workers and the public when it comes to managing

[1] According to NIH (NIH, 2019), recombinant and synthetic nucleic acids (DNA and RNA) are defined as follows: a) Recombinant -- molecules that are constructed by joining nucleic acid molecules (from different organisms, most often) and that can replicate in a living cell; and Synthetic – molecules that are chemically or by other means synthesized or amplified, and can base-pair with naturally occurring nucleic acid molecules. Lastly, molecules that result from the replication of either recombinant or synthesized DNA are also included in this class of molecules.

biosafety and biosecurity in research operations. Both documents address the biohazards and controls for Biosafety Levels 1 through 4, described below. The BMBL and the NIH Guidelines were developed, and are updated regularly, in collaboration with a broad range of scientists, laboratory directors, occupational physicians, epidemiologists, public health officials and health and safety professionals (CDC 2020) in order to continually address the changing nature of biosafety due to emerging threats and changing research. These documents set forth the work practices, containment, facility design requirements and the program management, oversight and training that define the standard of accepted practice for biosafety.

Regulatory Framework for Biosafety in the United States

Biosafety is regulated at the Federal, State and local levels of government. Because the use of biologicals in R&D and commercial products is newer than the use of chemicals, the regulatory framework, while robust, is less well-known to the public than for chemicals. The table below summarizes the regulatory framework with a more detailed discussion of each government level to follow.

Government Level	Legal Requirement	Biosafety Level	Industry Standard Practice
Federal Government	OSHA BBP Standard (29 CFR 1910.1030)	BSL 1, 2	CDC BMBL
	NIH Guidelines for rDNA Research[a]	BSL 1,2,3,4	NIH Guidelines for rDNA Research[a]
	Federal Select Agent Program (FSAP) (42 CFR 73; 7 CFR 331 and 9 CFR 21)	BSL 1,2,3,4	
	US Department of Transportation (DOT), 49 CFR.	BSL 1,2,3,4	
California State	Cal/OSHA BBP Standard (8 CCR § 5193)	BSL 1, 2	CDC BMBL
	Cal/OSHA ATD Standard (8 CCR § 5199)	BSL 3, 4	NIH Guidelines for rDNA Research[a]
	Medical Waste Management Act (California Health and Safety Code. Sections 117600 – 118360)	BSL 1,2,3,4	
	NIH Guidelines for recombinant DNA Research[a]	BSL 1,2,3,4	

Government Level	Legal Requirement	Biosafety Level	Industry Standard Practice
Local Government (San Mateo County)	Permit to generate Medical Waste; enforces the Medical Waste Management Act requirements	BSL 1,2,3,4	CDC BMBL
	Lab Decommissioning requirements	BSL 1,2,3,4	NIH Guidelines for rDNA Research[a]

[a] The NIH Guidelines for rDNA Research are legally required if an entity (public or private) receives funding from NIH for any aspect of its research, directly or indirectly. In the absence of funding, the NIH Guidelines, in whole or as applicable, are routinely followed as a matter of standard business practice.

Federal Requirements

Federal OSHA regulates workplace exposures to Bloodborne Pathogens (BBP) under the Bloodborne Pathogens Standard (29 CFR 1910.1030). BBP are infectious agents present in blood and body fluids and/or tissues of humans and non-human primates. It is applicable to all workplaces where the potential for exposure to BBP exists, including, but not limited to, medical and dental facilities, as well as laboratories who conduct research with BBPs. The BBP Standard was revised in 2000 to incorporate the hazard control and reporting of needlesticks from syringes and other BBP-contaminated sharps (i.e., razor blades, broken glass, etc).

Note: States may have their own OSHA regulatory framework as long as it is approved by Federal OSHA and is at least as strict as the Federal Standards. Workplace safety and health in California is promulgated in the Cal/OSHA regulations (Title 8 of the California Code of Regulations, 8CCR). Additional details are provided below pertaining to biohazard control at the State level.

The Federal Select Agent Program (FSAP) is part of the CDC and the U.S. Department of Agriculture (USDA). The Federal Select Agent Program oversees the possession, use and transfer of biological select agents and toxins, which have the potential to pose a severe threat to public, animal or plant health or to animal or plant products. Select agents are listed by name in the FSAP regulations. The FSAP does the following in regards to select agents:

- Develop, implement and enforce select agent regulations;
- Maintain a national database;
- Inspect entities that possess, use or transfer select agents;
- Ensure individuals who work with select agents receive a security threat assessment, as required;
- Provide guidance to regulated entities on achieving compliance. The FSAP regulations reference the CDC BMBL and the NIH Guidelines as the primary resources for compliance with the FSAP.

The NIH Guidelines are required to be followed when an institution, including any collaborating institutions either private or public, receives Federal money from NIH to conduct research as defined in the Guidelines. In this case, many private R&D operations (including biopharmaceutical companies in the SF Bay Area) are required to follow the NIH Guidelines as a condition of receiving such funding (either directly or indirectly). Where not required through receipt of federal funds, NIH Guidelines are generally followed, as applicable, as standard industry practice.

Lastly, the transport by air, rail and roadways, of infectious and non-infectious biologic materials (as well as hazardous chemicals) is governed by the U.S. Department of Transportation.

California Requirements

California regulates workplace exposure to BBP, similar to Federal, above, under its BBP Regulations (8 CCR § 5193 et seq.). The BBP Standard addresses workplace hazards in affected work populations by requiring (in summary):

- A written BBP Program;
- Training of affected employees initially at hire and annually thereafter;
- Offering affected employees a Hepatitis B vaccination;
- Maintenance of a Sharps Injury Log; and
- Review and update of the Program to ensure it remains relevant to site operations;
- Lab facilities and handling practices consistent with BSL-2 controls described in the BMBL.

The BBP Standard emphasizes potential exposures via aerosol droplet transmission by inadvertent contact with mucous membranes, and accidental exposure via needlesticks.

In addition to the BBP Standard, California is unique in that is also regulates the potential exposure to Airborne Transmissible Disease (ATD) and Airborne Transmissible Pathogens (ATPs) in workplaces under its ATD Standard (8 CCR § 5199). ATDs and ATPs are specifically listed by name in Appendix A of the Standard. In addition to clinical settings and other impacted worksites (mortuaries, jails, etc.) there are specific requirements for laboratories conducting research on airborne pathogens and microorganisms. The ATD Standard defines an ATP-L (Airborne Transmissible Pathogen – Laboratory), as follows:

A pathogen that meets one of the following criteria: (1) the pathogen appears on the list in Appendix D, (2) the Biosafety in Microbiological and Biomedical Laboratories (BMBL) recommends biosafety level 3 or above for the pathogen, (3) the biological safety officer recommends biosafety level 3 or above for the pathogen, or (4) the pathogen is a novel or unknown pathogen.

Simply put, the inclusion of the BMBL by reference in 8 CCR § 5199, and the reference to a biological safety officer (BSO), which is defined in the regulation, makes the presence of any BSL-3 laboratory in California subject to the additional regulatory requirements of

Cal/OSHA under the ATD Standard. In addition, if the laboratory receives funding directly or indirectly from NIH, the laboratory is also subject the NIH Guidelines.

Finally, biologically infectious and/or medical waste ("red bag waste") is regulated by the Medical Waste Management Act (California Health and Safety Code. Sections 117600 – 118360) overseen by the California Department of Public Health (CDPH). Any laboratory that handles BBP or other biohazards generates red bag waste and is therefore subject to the Medical Waste Management Act. The CDPH extends authority to local agencies (most commonly County level government agencies, such as SMC) for the oversight and enforcement of the Medical Waste Management Act.

Local Requirements

In Menlo Park, the SMC Department of Environmental Health oversees the waste generation from biological research by requiring the filing of a Medical Waste Permit based on the amount of biological waste that a site produces (<200 kg/month = Small Quantity Generator, or SQG; >200 kg/month = Large Quantity Generator, or LQG). SMC staff inspects each facility that files a permit at initiation of operations and generally annually or semi-annually thereafter.

SMC also manages the safe closure of laboratories that conduct biological research with their medical waste closure plan requirement. In order to safely close an active permit, a closure plan must be submitted that documents the microorganisms in use, the facility decontamination protocols to be followed, and the record of completion of such protocols.

2) Management of Animal Research Concerns

The use of laboratory animals is governed by an interrelated system of regulations (such as animal welfare regulations, 42 USC § 289d), policies, guidelines and procedures. In animal research facilities in the U.S., *the Guide for the Care and Use of Laboratory Animals* ("the Guide") is the primary tool used to govern all aspects of animal research, including, but not limited to:

- Consideration of alternatives to reduce or replace use of animals
- Use of appropriate species, quality and number of animals
- Avoidance or minimization of discomfort, distress, and pain
- Use of appropriate sedation, analgesia, and anesthesia
- Establishment of humane endpoints
- Provision for adequate veterinary care
- Provision for husbandry by appropriately trained and qualified persons
- Occupational Health and Safety of all staff in the vivarium
- Establishment of Emergency Procedures for both staff and animals

Oversight of animal research at Bay Area institutions (such as large hospitals and universities) and private companies is done by internal Institutional Animal Care and Use Committees (IACUC). The IACUC is comprised of, at minimum, a Doctor of Veterinary Medicine with experience in lab animal science and medicine, at least one practicing

scientist experienced in research involving animals, at least one member from a non-scientific background from either inside or outside the institution, and at least one public member to represent the general community interests in the proper care and use of animals.

The IACUC typically meets either monthly, quarterly or semi-annually depending on the size of the institution and complexity of the research. The IACUC conducts animal facility inspections at least twice per year. Lastly, the IACUC ensures the institution is adhering to requirements outlined in the Guide for the safety and health of the workers, and the care and humane treatment of the animals, including provisions for emergencies. The involvement of the community member on the IACUC ensures that the larger community concerns are addressed.

3) Hazard Control through Design – Bay Area Examples

It is a very common community concern to fear uncontrolled releases of biohazards to the nearby public from biological research labs. This is understandably a potential public health and environmental risk. One important misconception of biolabs is that biohazardous agents in use can be exhausted directly through the laboratory exhaust system. This is not true. The facility and infrastructure requirements for biological research laboratories provide considerable redundancy to contain biohazards at the source within a lab.

In practice (and as reviewed in the biosafety levels review in Attachment 1), beginning at BSL-2, handling of biohazards is done in a very controlled manner and inside a Class II biosafety cabinet (or BSC). BSCs are designed to both protect the worker, the agents being handled, and the larger environment. BSCs capture biohazards at the source, and only clean, high efficiency particulate air (HEPA) filtered air is exhausted through the exhaust system, or with lower-level hazard, back to the room.

The ventilation requirements increase for BSL-3 labs. A mechanical air ventilation system is required that provides sustained directional airflow by drawing air into the lab from "clean" areas toward potentially contaminated (e.g., negative air cascade). To accommodate this effectively and more efficiently, BSL-3 labs have gown-in rooms that are negatively pressured from the laboratory hallway. The main lab area is further negatively pressurized compared to the gown-in room, thereby forming the cascade. The design is such that under failure conditions the airflow will not be reversed at the containment barrier. A visual monitoring device that confirms directional airflow is provided at the entrance to the gown-in room, and in the gown-in room.

Animal research facilities are typically distinct and separate from other lab spaces, but adhere to control of hazards, including animal dander, chemical exposures, and biohazards at the source with the use of HEPA-filtered cage racks, BSCs for animal handling and cage changing, and bedding changing stations. For the control of chemicals and anesthetics, the use of charcoal filtered devices or fume hoods are utilized.

A key example of a successful implementation of mixed-use zoning and biosafety research labs is the Mission Bay South development in San Francisco. The very issue that the Parkline Project is managing was successfully dealt with in the Mission Bay South development – managing public and environmental health with adjacent biomedical research (UCSF, Kaiser, and private sector labs) and residential housing and retail.

The Mission Bay South EIR addressed the biosafety hazard directly in its CEQA mitigation measures I.1, I.2 and I.3 (here). In summary, the mitigation measures required:

> I.1: Businesses handling biohazardous materials, but that do not receive federal funding, to certify that they adhere to the NIH and CDC guidelines, as well as the Guide for the Care and Use of Laboratory Animals.
>
> I.2: The use of HEPA Filters. Businesses handling biohazardous materials to certify that they use high efficiency particulate air (HEPA) filters (or substantially equivalent devices) on all exhaust from BSL-3 laboratories. Require such businesses to certify that they inspect or monitor filters regularly.
>
> I.3: Require businesses to certify that they do not handle or use biohazards requiring BSL-4 containment.

The controls described in I.1 and I.2 are standard and required practices in biosafety research lab practice and design in California, respectively. Regarding I.3, the Parkline Project would not accommodate any BSL-4 labs and such a mitigation measure is not applicable to the Parkline project. As of September 2023, there were no BSL 4 laboratories in California. There are currently only 13 nationwide BSL-4 laboratories, primarily run by US government agencies, or at select universities that are funded and overseen by the US government.

The EIR developed for the Mission Bay South project site relied heavily on the EIR prepared by the former Chiron facility in Emeryville, CA. Chiron was conducting unique (at the time) research with recombinant proteins and there was considerable concern by the nearby public to manage the risks and hazards of genetically modified cells. What proved to be successful for Chiron was the direct involvement of select lay people from the community to sit on the IACUC, as well as Chiron's Institutional Biosafety Committee (or IBC). An IBC is a requirement of institutions and companies that receive NIH-funding and serves as the oversight body for the safe research of biological materials.

From the NIH website[2], NIH FAQs, this is the definition of an IBC:

Institutional Biosafety Committees (IBCs) were established under the NIH Guidelines *to provide local review and oversight of nearly all forms of research utilizing recombinant or synthetic nucleic*

[2] Available at https://osp.od.nih.gov/policies/biosafety-and-biosecurity-policy/faqs-on-institutional-biosafety-committee-ibc-administration-april-2024/ and incorporated by reference.

acid molecules. Over time, many institutions have chosen to assign their IBCs the responsibility of reviewing a variety of experimentation that involves biological materials (e.g., infectious agents) and other potentially hazardous agents (e.g., carcinogens). This additional responsibility is assigned entirely at the discretion of the institution.

An IBC is minimally comprised of five members, two of which are non-affiliated with the institution or entity under oversight. These non-affiliated members *"represent the interest of the surrounding community with respect to health and protection of the environment. These may be officials of state or local public health or environmental protection agencies, members of other local governmental bodies, or persons active in medical, occupational health, or environmental concerns in the community."* Additionally, individual(s) representing community attitudes is/are recommended member(s) of an IBC. Additional details and recommendations on membership, operations, and oversight responsibilities are provided here: NIH FAQs.

Mixed-use zoning such as that identified for the Parkline Project does benefit from coordination with the key site personnel from the various site uses (residential and commercial), and City and County agencies to ensure emergency management plans are clear and coordinated. The Mission Bay South project, which covers a significantly larger area that then Parkline Project, included such provisions in its CEQA Mitigation Measures (see H.2, H.3, H.3a and H.3b). My direct experience at Chiron in Emeryville as a leader on the Emergency Response Team proved the value of preparation and coordination with the City fire and police departments during emergencies, both large and small.

Lastly, and not least, while oversight is provided by IBCs, IACUCs and coordinated efforts with local agencies, day-to-day compliance of research operations is managed by a team of professionals within the research institutions, including at SRI. Experienced Occupational & Environmental Safety and Health (OEHS) professionals and their staff provide the safety and health foundation (from Programs, Policies, Training and more) from which the research conducted in the labs is safely done.

Summary

The frameworks for biological safety are robust in the United States and particularly in California and the Bay Area. Research scientists in the private sector, who invariably come from research institutions where NIH-funding grants are common-place, are very familiar with the NIH Guidelines and the BMBL which are standard industry practice. Further, OEHS professionals and Biological Safety Officers (BSOs) that support the exposure controls and overall risk management within the institutions and companies (both publicly funded and privately owned) use the BMBL and the NIH Guidelines as the "go-to" resources for managing biological exposure risk, in conjunction with other workplace regulations such as Cal/OSHA and local government enforcement. Finally, here in California, we are unique in that the BMBL is referred to as the citing reference for BSL-3 work in laboratories. This regulation gives the recommendations in the BMBL the force of law in California where BSL-3 work is done.

Examples of successful mixed-use areas are already in place, namely the Mission Bay South, and the Emeryville area. These areas show that properly planned, coordinated and transparent requirements mitigate risks while allowing development for the 21st century.

References

California Occupational Safety & Health Administration (Cal/OSHA).

Centers for Disease Control (CDC). National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th Edition. June 2020.

National Institutes of Health (NIH), Dept. of Health and Human Services. *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines)*. April 2019.

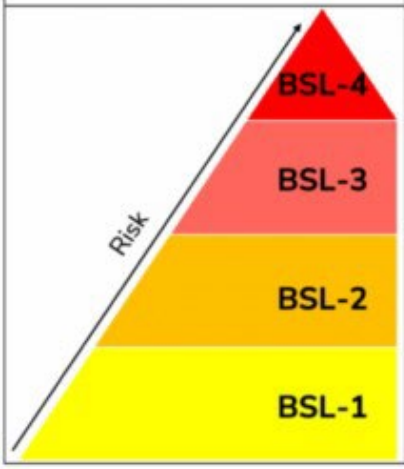
National Research Council. *Guide for the Care and Use of Laboratory Animals.* National Academy Press. Washington D.C., 2011.

San Mateo County (SMC) Medical Waste Program.
https://www.smchealth.org/medwaste

ATTACHMENT 1
Summary of BSL Controls

A Review of the Biosafety Levels

According to the BMBL (2020), the CDC published *Classification of Etiologic Agents on the Basis of Hazard* in 1974. This report introduced the concept for establishing ascending levels of containment that correspond to risks associated with the handling of infectious microorganisms that present similar hazard characteristics. Human pathogens were grouped into four classes according to mode of transmission and the severity of disease they caused. These became known as the Biosafety Levels (BSLs). The primary risk criteria used to define the four ascending levels of containment (the BSLs 1 through 4), are infectivity, severity of disease, transmissibility, and the nature of the work being conducted (CDC 2020). See the Figure below.

Biosafety Level (BSL)	Characteristics	Pathogens/Disease
	Infectious aerosol transmission that may cause serious or lethal infections with no treatment available	Ebola virus, Variola virus (smallpox), Marburg virus
	Infectious aerosol transmission that may cause serious or lethal infections	Coronavirus, Mycobacterium tuberculosis, Yersinia pestis (plague), malaria
	Infectious agents of moderate risk with ingestion or mucous membrane transmission	Influenza, Lyme disease, salmonella, measles, mumps
	Low-risk agents that are not known to cause human disease	E. coli

Each level of containment describes the microbiological practices, safety equipment, and facility safeguards for the corresponding level of risk associated with handling the agent. The facility safeguards associated with the BSLs help protect non-laboratory occupants of the facility, the public health and the environment (CDC 2020). Summaries of the biosafety levels (BSLs) 1 through 4 are provided below. The California BBP Standard essentially addresses laboratory practices and facilities described in BSL-1 and BSL-2. The California ATD Standard directly addresses the laboratory practices and facilities described in BSL-3 and BSL-4.

Note: BSL-4 labs are not included in the Parkline Project. No further discussion of BSL-4 is provided.

A summary table from the BMBL and a more detailed infographic showing facility safeguards of the four BSLs are provided in Attachment 2.

Biosafety Level 1

- Used for bioagents not known to consistently cause disease in healthy adults.

- Standard microbiological laboratory practices, such as:
    - All workers receive appropriate training;
    - Work surfaces decontaminated once a day and after spill;
    - Eating, drinking, smoking and applying cosmetics are prohibited in the laboratory;
    - Procedures are performed carefully to minimize creation of aerosols;
    - A sink for handwashing is available.
- Laboratory Facilities include sturdy furniture that is easily cleanable, and if the lab has windows, they are fitted with fly screens.
- Examples: high school or college labs and research institutions

Biosafety Level 2

- Used for a broad spectrum of bioagents in the community and associated with human disease of moderate severity.
- Standard microbiological laboratory practices as BSL-1, plus:
    - All contaminated liquid or solid waste is decontaminated before disposal;
    - Access to the laboratory is limited to qualified and trained personnel;
    - BSL-2 labs are labeled as such and the biologics in use are indicated;
    - PPE is worn in the lab (lab coat, disposable gloves, safety glasses) and PPE is removed upon lab exit;
    - Special care is used with sharps to avoid accidental punctures;
    - Durable, leakproof containers are used to collect waste that is decontaminated offsite;
    - Workers are offered medical surveillance (prophylaxis and vaccines, if available) and encouraged to self-report any health conditions that could make them more susceptible to infection.
- Laboratory Facilities same as BSL-1, plus:
    - Limited access and lab is separated from public areas
    - A biological safety cabinet (BSC) is used to enclose tasks that have the risk of generating aerosols;
    - An eyewash is available at a lab sink;
    - A method for decontaminating laboratory waste is available.
- Examples: research institutions, essentially all hospitals and medical and veterinary schools, dental offices and medical laboratories.

Biosafety Level 3

- Used for bioagents with potential for aerosol transmission that may cause serious or potentially lethal disease by inhalation if left untreated.
- Workers are immunized for agents handled or potentially present.
- Standard microbiological laboratory practices as BSL-2, plus:
    - Any incidents resulting in exposures are immediately reported to lab supervisor and institutional management and investigated. Appropriate records are maintained.
    - Use of respiratory protection is considered based on risk assessment;
- Laboratory Facilities same as BSL-2, plus:

    - Access to the lab is through two consecutive self-closing doors, typically separated by a change room and/or anteroom.
    - The handwashing sink is hands-free or automatically operated and should be located near the exit door;
    - A mechanical air ventilation system is required that provides sustained directional airflow by drawing air into the lab from “clean” areas toward potentially contaminated (e.g., negative air cascade). The design is such that under failure conditions the airflow will not be reversed at the containment barrier;
    - A visual monitoring device that confirms directional airflow is provided;
    - Lab exhaust air is not recirculated;
    - Lab exhaust air is dispersed away from occupied areas from the building air intake locations, or the exhaust air is HEPA filtered.
    - When present, HEPA filter housings have gas-tight isolation dampers, decontamination ports, and/or bag-in/bag-out capability;
    - BSL-3 facility design, operational parameters, and procedures are verified and documented prior to operation. Facilities are tested annually or after significant modification to ensure operational parameters are met;
    - Appropriate communication systems are provided between the lab and the outside;
    - Provisions for emergency communication and emergency access or egress are developed and implemented.
- Examples: biological research institutions, hospitals and medical and veterinary schools.