Complete Streets Commission

SPECIAL MEETING AGENDA

Date: 11/19/2026
Time: 6:30 p.m.
Location: Zoom.us/join – ID# 845 2506 8381 and
City Council Chambers
751 Laurel St., Menlo Park, CA 94025

Members of the public can listen to the meeting and participate using the following methods.

How to participate in the meeting

- Access the meeting, in-person, at City Council Chambers
- Access the meeting real-time online at:
  Zoom.us/join – Meeting ID 845 2506 8381
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  (669) 900-6833
  Meeting ID 845 2506 8381
  Press *9 to raise hand to speak

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Special Session

A. Call To Order

B. Roll Call

C. Reports and Announcements

Under “Reports and Announcements,” staff and Commissioners may communicate general information of interest regarding matters within the jurisdiction of the Commission. No Commission discussion or action can occur on any of the presented items.

D. Regular Business

D1. Accept the Complete Streets Commission minutes for October 14, 2026 (Attachment)

D2. Provide feedback on the Santa Cruz Ave and Sand Hill Road Corridor Safety Project preliminary findings (Staff Report #26-009-CSC)

E. Informational Items

E1. Update on major project status

E2. Tentative Complete Streets Commission agenda (Attachment)

F. Committee/Subcommittee Reports

G. Adjournment

At every Regular Meeting of the Commission, in addition to the Public Comment period where the public shall have the right to address the Commission on any matters of public interest not listed on the agenda, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during the Commission's consideration of the item.

At every Special Meeting of the Commission, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during consideration of the item. For appeal hearings, appellant and applicant shall each have 10 minutes for presentations.

If you challenge any of the items listed on this agenda in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the City of Menlo Park at, or prior to, the public hearing.

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Complete Streets Commission

REGULAR MEETING MINUTES – DRAFT

Date: 10/14/2026
Time: 6:30 p.m.
Location: Teleconference and Belle Haven Community Campus 100 Terminal Ave, Menlo Park, CA 94025

A. Call To Order

Chair Cole called the meeting to order at 6:50 p.m.

B. Roll Call

Present: Bailey, Cole, Herscher, Ierokomos, Rennie
Absent: Cebrian, Rascoff
Staff: Senior Transportation Planner Catrine Machi, Associate Transportation Planner Casandra Cortez

C. Reports and Announcements

The Commission received updates on a possible Complete Streets Commission Special Meeting date for November 19 – to be confirmed.

D. Public Comment

- None

E. Regular Business

E1. Accept the Complete Streets Commission minutes for September 9, 2026 (Attachment).

ACTION: Motion and second (Bailey/ Ierokomos), to accept the Complete Streets Commission minutes for September 9, 2026, passed 5-0-2 (Cebrian, Rascoff absent).

E2. Receive and file the 2026-2027 Complete Streets Commission work plan (Attachment)

E3. Report out from Assembly Bill 382 School Zone Speed Limits Ad Hoc Subcommittee

Chair Cole made the presentation (Attachment).

No public comment.

The commission discussed the next step would be for the ad hoc subcommittee to discuss with staff.

F. Informational Items

F1. Update on major project status

None.

F2. Tentative agenda list (Attachment)

The Commission received an update on upcoming agenda items.

H. Adjournment

Chair Cole adjourned the meeting at 7:23 p.m.

Senior Transportation Planner Catrine Machi

Complete Streets Commission work plan

Public Works Department
701 Laurel Street, Menlo Park CA 94025
City Council approval date: 9/15/2026

CITY OF MENLO PARK

Work plan goals
Ongoing Work: 1. Provide feedback to Staff and advise City Council on the implementation of the City's adopted goals for Complete Streets, Transportation Master Plan, Vision Zero Action Plan, and Climate Action Plan. 2. Advance the goals of the City's Climate Action Plan by making multimodal alternatives to driving safer and more attractive, including the installation of necessary infrastructure. Promote a safe and accessible multimodal transportation network. 3. Support the City's ongoing priority of Safe Routes and advocate for community engagement, on-site pilot projects, program continuity, and implementation. 4. Support Council initiatives to improve access to Downtown for all modes of transportation and support downtown businesses. 5. Advise City Council on regional transportation-related programs and projects. 6. Encourage and facilitate robust and inclusive public participation and community engagement in our meetings and in the City's transportation policies and programs. Provide the resident perspective to the development and implementation of Complete Streets projects and initiatives. **2026-2027 Focus:** 1. Consistent with Vision Zero, prioritize progress and implementation of safety improvements on the City's high crash corridors, including Willow Road, Middlefield Road, and Santa Cruz Avenue. 2. Consistent with the City's Safe Routes to Schools Program and the Vision Zero Action Plan, enhance the safety of school zones and routes. Review community feedback and results of the Coleman Avenue Pilot and make final recommendations**.** 3. Incorporate the data-driven, safety-first approach of the Vision Zero Action Plan where possible to guide prioritization. 4. Review and provide feedback to Staff and City Council on the Slow Streets Program annual report. 5. Provide input and recommendations to City Council on the City's e-conveyance policies (e-bikes, e-motos, e-scooters, etc.) and programs 6. Defer the request to 2027-2028: Provide input and recommendations, as it relates to transportation, to the City Council on the City's major land use and development projects that are not subject to SB 330 for which a TIA and Environmental Impact Report (EIR) are required. Subject to renewal by City Council, City Staff, Chair and Vice Chair will select two development projects to review as a pilot, to be delivered to the City Council as informational items.

Work plan history

Action	Date	Notes
Work Plan recommended to CSC	August 27, 2026	Commission approved
Work Plan recommended to City Council	September 15, 2026	City Council approved

Complete Streets Commission, October 14, 2026

AB 382 school zone speed limits

Building on the Council's 2021 and 2022 school zone resolutions

Report of the ad hoc subcommittee, Commissioners Rascoff and Rennie

Draft for discussion. Figures are the subcommittee's estimates from public City and state data and have not been verified by staff.

In brief

What the City has

In 2021 and 2022 the Council set 15 mph near 24 schools and preschools. Those limits apply on named streets only, and only while children are arriving or leaving.

The gap

They cover 7.3 of the 21 miles of street within 500 feet of a school. In five years, 23 of the 44 collisions with people walking or biking in school zones involved a child.

Option B

A new resolution layered on top: keep every 15 mph street, add 15 mph on 10 miles of residential street and 20 mph on 3 miles of collector and arterial street, at all hours. Signs: about $143,000.

What we ask the Commission to consider is on slide 19. Questions still to confirm are on slide 17.

Sources: Resolutions 6652 and 6761; City GIS and collision data; California Crash Reporting System (CCRS)

What the City already has

Resolution 6652 (August 2021, unanimous) and Resolution 6761 (July 2022, 4-0) set 15 mph within 500 feet of 24 sites, including seven preschools and child care centers. Both passed on the consent calendar.

24

school and preschool sites named in the two resolutions

119

of 355 street segments within 500 feet of a school are named, or 34%

~86

15 mph signs in the City's sign inventory, alongside about 90 WHEN CHILDREN ARE PRESENT plaques

Limit 1: named streets

Each site lists one to five streets. Other streets inside the same 500-foot zone have no school limit.

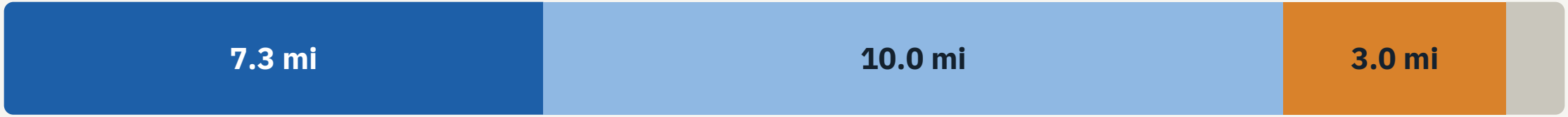
Limit 2: arrival and dismissal

The limit applies "while children are going to or leaving the school." The law at the time required that condition. AB 382 removed it.

Sources: Resolutions 6652 and 6761; staff reports 21-149-CC and 22-146-CC; City sign inventory

The coverage gap

Miles of street within 500 feet of the 27 school and preschool sites in Menlo Park



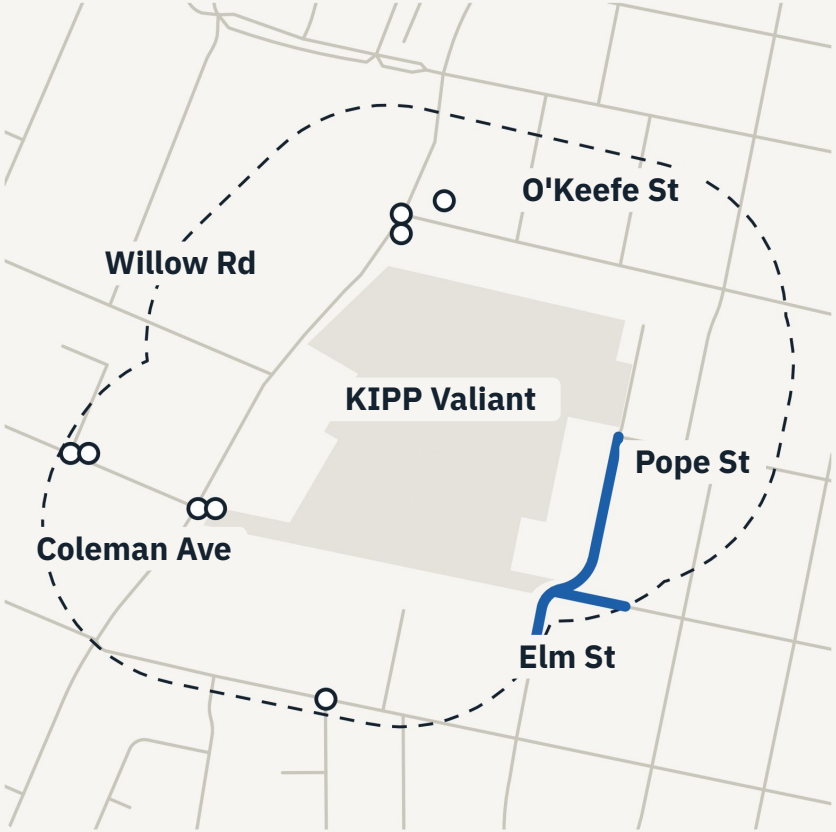
- **15 mph today**, named in Resolutions 6652 and 6761: 119 segments
- **New 20 mph**, collector and arterial streets: 41 segments
- **New 15 mph**, residential streets that qualify: 180 segments
- **Not included**: 12 private segments, 3 on state routes (Caltrans)

Today the school limit covers about a third of the zone. With Option B it would cover 340 of 355 segments, or 96%.

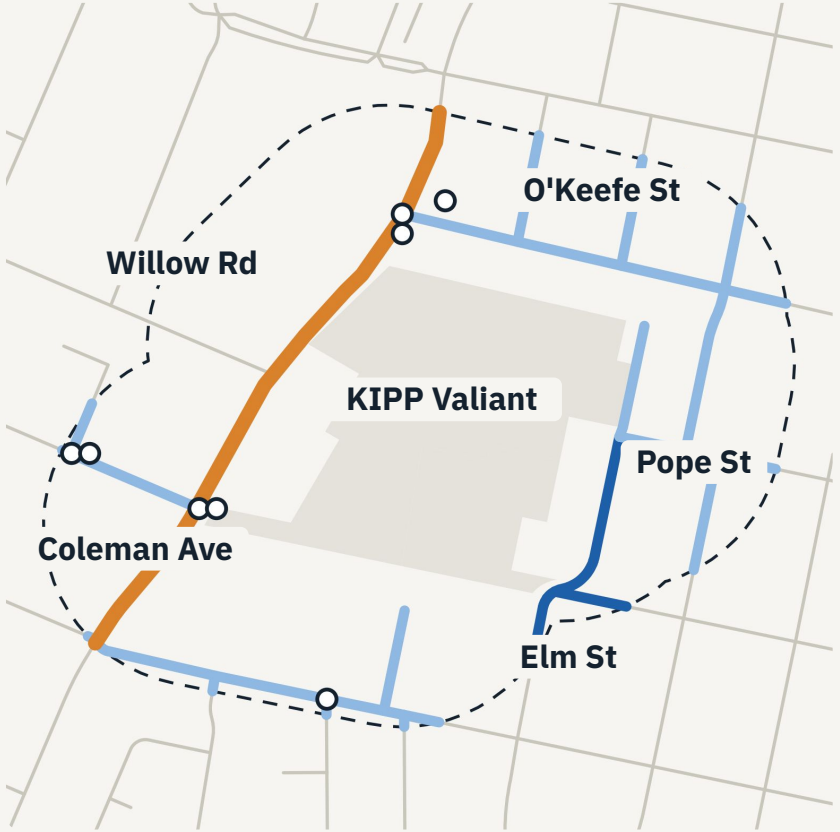
Source: subcommittee inventory from City GIS (2026-09-17). 15 mph eligibility approximates the residence district test; staff would confirm street by street.

One school area: KIPP Valiant and Willow Road

Today



With Option B



15 mph today

New 15 mph

New 20 mph

500-foot zone

Collision involving a child walking or biking, five years to September 2025

15 mph today covers 0.27 of 1.9 miles of City street here, or 14%.

8 crashes involved a child. None were on streets posted 15 mph today. Five were at Willow Rd intersections.

KIPP Valiant had the most reported collisions of any school zone in the inventory. Sources: City GIS; CCRS; City collision layer

What AB 382 allows

20 mph, now to 2031

A city may declare 20 mph in a school zone by ordinance or resolution, with no engineering survey. This option ends January 1, 2031.

15 mph, no end date

On residential streets with two lanes or fewer and a limit of 30 or lower. AB 382 removed the old condition that tied it to arrival and dismissal.

From 2031: a default

20 mph becomes the statewide default in signed school zones, when one of three posted conditions applies.

A school zone is now every street within 500 feet of school grounds in any direction. Limits on state highways need Caltrans approval. School zone limits can be enforced by radar without a survey.

Source: AB 382 (Berman, Chapter 555, Statutes of 2025); Vehicle Code 22352, 22352.5, 22358.4, 40802

Option B: a new layer, not a replacement

New layer

One new resolution under AB 382

15 mph on 180 qualifying residential segments (10.0 mi). 20 mph on 41 collector and arterial segments (3.0 mi), such as Willow, Middlefield, Sand Hill, Sharon and University. Applies at all hours.

Kept as is

Resolutions 6652 and 6761

15 mph on the 119 segments the Council named in 2021 and 2022, with their existing signs. Nothing on these streets changes in the first phase.

Why layer

It keeps the Council's earlier work intact, leaves 28 signed zone entries untouched, and limits the new action to streets not yet covered.

Why two tiers

15 mph matches the existing zones and Atherton's school zones. The 15 mph authority does not expire in 2031. 20 mph is the lowest limit AB 382 allows on larger streets.

Source: subcommittee inventory. Street classes from the City's Circulation layer; staff would confirm each street.

Proposed: limits that apply at all hours

What it means

The new 15 and 20 mph limits would apply 24 hours a day, every day, like any other posted speed limit. Drivers would not need to judge whether children are present.

Why it is possible

AB 382 struck the arrival/dismissal condition from the 15 mph authority. The interim 20 mph authority has no time condition.

Why it matters

6 of the 23 collisions involving children happened outside weekday arrival and dismissal hours, when today's 15 mph limits do not apply.

To confirm with staff and the City Attorney

- Which sign design the 2026 California MUTCD allows for an all-day school zone limit. Today's standard assembly carries a WHEN CHILDREN ARE PRESENT plaque.
- How the 20 mph tier works after January 1, 2031, when the statewide default applies only under posted conditions. The 15 mph tier is not affected.

Sources: Vehicle Code 22358.4(b)(1)(A) and 22352.5 as amended by AB 382; CCRS; California MUTCD 2026, section 7B.05

What the signs could look like

Today, 2021-22 zones



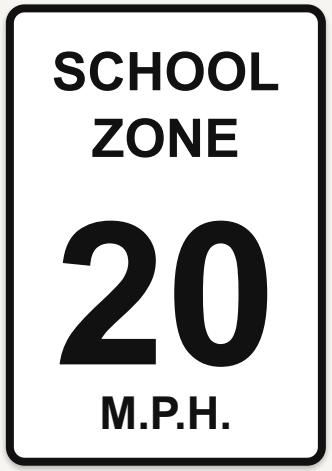
Applies only when children are present

New 15 mph, residential



Would apply at all hours

New 20 mph, larger streets



Would apply at all hours

Illustrations only. The design must follow the 2026 California MUTCD, which staff would confirm (slide 17).

Today's assembly: California MUTCD 2026, School Speed Limit Assembly C(CA). New designs illustrative.

Collisions involving children

23 of 44

pedestrian and cyclist collisions in school zones over five years involved someone under 18 walking or biking

We matched 43 of the City's 44 records to the state crash database, which records ages. One record had no state match.

Of the 23 collisions	Count
Child on a bicycle	17
Child on foot	6
Weekdays, 7 to 9 a.m. or 2 to 4:30 p.m.	17
Injury reported (all minor)	19
On or nearest a street posted 15 mph today	12
On a collector or arterial street (20 mph under Option B)	8
On a residential street not yet covered (15 mph under B)	3

Ages 5 to 17, median 13. No fatalities.

Sources: City collision layer, five years ending September 2025; California Crash Reporting System (CCRS) for victim ages

The 44 collisions, by age and by street

Today's 15 mph streets | Rest of the 500-foot zones, not covered today

Who was involved	Named in 2021-22	Residential (new 15)	Larger street (new 20)	State route	Total
Child under 18 walking or biking	12	3	8	0	23
Adults only	7	3	9	1	20
No match in state data	0	1	0	0	1
All 44	19	7	17	1	44

Across all 44

25 happened on streets the 2021 and 2022 resolutions do not cover. 19 were on streets posted 15 mph today.

Involving children

11 of the 23 were on streets not covered today, 8 of them on collector and arterial streets that would go to 20 mph.

Sources: City collision layer, five years ending September 2025; CCRS for ages. Street is the one nearest the reported point.

After the 2021 and 2022 signs went up

	Streets posted 15 mph			Other streets in the same zones		
Crashes, 4 years	**2016-19**	**2022-25**	**Change**	**2016-19**	**2022-25**	**Change**
All reported crashes	72	45	−38%	204	164	−20%
Injury crashes	35	21	−40%	84	75	−11%
Pedestrian and cyclist crashes	14	14	0%	33	34	+3%

What it suggests

Crashes fell more on the streets that got 15 mph signs than on nearby streets that did not.

What it does not show

The differences are within the range of chance at these counts. Pedestrian and cyclist crashes did not change.

Source: CCRS crashes within 100 ft of a school zone street. 2020 and 2021 excluded (pandemic, installation). Install dates not confirmed.

What to expect

Study	Change	Result
UC ITS estimate	5 mph cut, signs only	Mean speed down 1 to 2 mph
Portland, 2018	Signs only, 25 to 20 mph	Small but significant speed reductions
Seattle, 2016	Limits lowered 5 mph	17% lower odds of a fatal or injury crash
Edmonton	School zones, 30 to 18 mph	43.5% fewer fatal and injury collisions
London, 1986-2006	20 mph zones with humps	42% fewer road casualties

Larger effects come with physical changes or enforcement. Sign-only limits move average speeds modestly.

Scale check

$213,000

Caltrans's cost of one collision with a visible injury.

The Option B signs cost about two thirds of one such collision.

Sources: Assembly analysis of AB 382; PSU/PBOT 2020; IIHS 2024; Grundy et al., BMJ 2009; Caltrans Local Roadway Safety Manual 2026

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Four options

Option	What changes	Signs	Cost estimate	Main trade-off
0. No new action	Keep the 2021 and 2022 zones as they are	None	$0	Coverage stays at about a third until the 2031 default
A. One tier	Add 20 mph on every uncovered street in the zones	291	$136,000	Simplest. Residential streets get 20, not 15
B. Two tiers (preliminary preference)	Add 15 mph on residential streets, 20 mph on larger streets, at all hours	306	$143,000	Matches existing zones and Atherton. More staff review
C. B plus a package	B, plus markings, School Zone signs and possible speed humps at high-collision sites	306 plus package	$255,000 to $445,000 before grants	Depends on a grant. Larger expected effect

All options keep Resolutions 6652 and 6761. Costs cover all 27 sites and exclude staff time. Limiting the scope to K-12 campuses would cut sign counts by roughly a third.

Source: subcommittee inventory. Option C sites: KIPP Valiant, Hillview, Nativity, Phillips Brooks, La Entrada

Cost estimates, signs only

Item	What it covers	Signs	Planning	Range
Option B layer	97 zone entries and 15 junctions between tiers	306	$143,250	$53,550 to $153,000
Option A layer	97 zone entries	291	$135,750	$50,925 to $145,500
Later phase: all-day limits on the existing zones	Amend the time condition; remove about 90 WHEN CHILDREN ARE PRESENT plaques; replace 4 SCHOOL SPEED LIMIT 25 signs	94	about $13,000	$13,250 to $17,750

How we counted

Three signs per through-street entry not already signed (limit, advance School sign, END). One sign where a 15 mph street leaves a 20 mph street. $500 per new post, $175 per sign on an existing post. For scale, the City budgeted $69,000 for the 2021 and 2022 signs.

Not included

Staff time. Caltrans costs on Willow Rd east of US-101. Optional advance signs for 15 mph streets. Markings and beacons.

Unit costs: Fresno 2026 (about $500 per sign installed); Sacramento 2020 (about $171); Caltrans 2025 bid ($125 per panel on an existing post)

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Option C: a broader package at high-collision sites

Element	Quantity (illustrative)	Cost
School Zone signs	About 4 per site	$2,000
Pavement markings: SLOW SCHOOL XING, yellow crosswalks	About 4 approaches per site	$8,000
Speed humps or tables on residential approaches	2 to 4 per site, where Fire and Police agree	$12,000 to $50,000
Per site		$22,000 to $60,000
Five sites		$110,000 to $300,000

Candidate sites, by pedestrian and cyclist collisions: KIPP Valiant, Hillview, Nativity, Phillips Brooks, La Entrada. Humps are not proposed on arterials such as Willow Rd.

A possible grant approach

- SMCTA Cycle 8 (due Oct 30, 3 p.m.): traffic control devices and quick-build are eligible. 10% cash match, City Manager letter, Council resolution.
- Caltrans HSIP Cycle 13 (due Nov 2): the crossing set-aside (up to $360,000, 90% reimbursed) covers signs, striping and beacons, not humps.
- If these dates are too close, later cycles.

Offered as an idea for staff to weigh, not an agreed plan.

Unit costs: speed humps $6,000 to $12,500 each (LADOT report, November 2025); markings about $2,000 per approach; signs $500

Questions to confirm

We would welcome staff and the City Attorney's view on these before anything goes to Council.

Preschools

Do licensed preschools and child care centers count as schools under AB 3827? The Vehicle Code does not define the term. The City treated them as schools in 2021 and 2022.

Higher fines

We found no California law that raises fines in school zones, and the California MUTCD omits higher-fines signs. Is there authority we missed?

All-day signs

What sign design the MUTCD allows for limits that apply at all hours.

After 2031

How the 20 mph tier works once the interim option expires and the statewide default applies.

Layer or amend

Whether the new action should be a separate resolution alongside 6652 and 6761, or an amendment to them.

Boundary streets

How to coordinate with Atherton on streets that form the city line, such as Valparaiso, Ravenswood and parts of Ringwood.

Staff note (September 21): the shared responsibility with Atherton is on streets that are themselves the boundary.

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A possible sequence

Phase 1

Option B layer

Staff review of the inventory; staff report and resolution; signs on City streets; Caltrans request for Willow Rd east of US-101.

Phase 2

All-day limits on the existing zones

Amend the time condition in Resolutions 6652 and 6761 and update about 90 plaques. About $13,000.

If funded

Package at high-collision sites

Markings, School Zone signs and possible speed humps at up to five sites, through a grant application.

Throughout

Measure the result

A before-and-after speed sample at a few zones, using the StreetLight data the City already buys.

Timing would be for staff and Council to set against other priorities, including the budget pressures noted in the September 9 packet.

Sequence is a suggestion for discussion

What we ask the Commission to consider

1 Support Option B in concept

A new resolution layered on Resolutions 6652 and 6761: keep every 15 mph street, add 15 mph on qualifying residential streets and 20 mph on larger streets within 500 feet of schools, at all hours.

2 Invite staff review

Ask staff, as their workload allows, to review the inventory and advise on cost, timing and the questions on slide 17.

3 Treat all-day limits on the existing zones as a later phase

About $13,000 in signs, plus amending the time condition.

4 Consider a grant package

Whether markings, School Zone signs and possible speed humps at high-collision sites fit a future grant application.

Full analysis, maps and per-school inventory: mp-school-zones.vercel.app

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Appendix: newly covered streets, K-12 (1 of 2)

School zone	New 15 mph (residential)	New 20 mph
Alto International School (Willows Campus)	Barton Way, Beacon St, Elm St, Gilbert Ave, Laurel Ave, Nova Ln, Shirley Way, Walnut St	Willow Rd
Beechwood School	Bieber Ave, Chilco St, Hill Ave, Modoc Ave, Plumas Ave	None
Belle Haven Elementary	Berkeley Ave, Modoc Ave, Newbridge St, Rosemary St, Sage St, Sandlewood St, Windermere Ave	None
Hillview Middle School	Atkinson Ln, Hesketh Dr, Hillview Dr, Hobart St, Politzer Dr, Whitaker Way, William Ct	None
KIPP Valiant Community Prep	Arnold Way, Barton Way, Beacon St, Coleman Ave, Coleman Pl, Gilbert Ave, Laurel Ave, Marmona Dr, Nova Ln, O'Keefe St, Regal Ct, Shirley Way, Walnut St	Willow Rd
La Entrada Middle School	Blueridge Ave, Crest Ln, Eastridge Ave, Loma Prieta Ln, Monte Rosa Dr, Olympic Ave, Sharon Ct, Warner Range Ave, Zachary Ct	Sharon Rd

Source: subcommittee inventory (City GIS, 2026-09-17)

Appendix: newly covered streets, K-12 (2 of 2)

School zone	New 15 mph (residential)	New 20 mph
Laurel School, Upper Campus	Byers Dr, Falk Ct, French Ct, Woodland Ave	None
Mid-Peninsula High School	Carlton Ave, Frontage Rd, Ivy Dr, Kelly Ct	O'Brien Dr
Nativity School	Mills St, Noel Dr, Pine St	None
Oak Knoll Elementary	Bay Laurel Dr, Oak Ave, Oakfield Ln, Vine St, White Oak Dr	Sand Hill Rd
Phillips Brooks School	Deanna Dr, La Loma Dr, Monte Rosa Dr, Warner Range Ave, Zachary Ct	Avy Ave
St. Raymond School	Fremont St, Garden Ln, San Mateo Dr, Windsor Dr	None
Trinity School	Siskiyou Dr, Sunset Ct, Sunset Ln	Sand Hill Rd

Mid-Peninsula High also fronts Willow Rd east of US-101 (SR-114), which needs Caltrans approval

Appendix: preschools and child care (1 of 2)

School zone	New 15 mph (residential)	New 20 mph
Alpha Kids Academy	Cherry Ave, Pine St	Ravenswood Ave
Belle Haven Child Development Center	Berkeley Ave, Modoc Ave, Newbridge St, Windermere Ave	None
Bright Angel Montessori Academy	Henderson Ave, Sevier Ave, Van Buren Rd, Windermere Ave	None
Building Kidz of Menlo Park	Coleman Ave, Coleman Pl, Gilbert Ave, Marmona Dr	Willow Rd
JobTrain Child Development Center	Casey Ct	O'Brien Dr
Kirk House Preschool (Menlo Church)	Millie Ave, Rose Ave	Oak Grove Ave, Santa Cruz Ave, University Dr
MSD GeoKids Preschool (USGS campus)	Gloria Cir, Seminary Dr	Middlefield Rd
Menlo Children's Center	Alma Ln, Noel Dr	Alma St

Preschool eligibility is a question to confirm (slide 17)

Appendix: preschools and child care (2 of 2)

School zone	New 15 mph (residential)	New 20 mph
Menlo-Atherton Cooperative Nursery School	Alice Ln, College Ave, Kenwood Dr, Morey Dr	Nealon Park, University Dr
New Beginnings Preschool	Ambar Way, Garland Dr, Garland Pl, Hobart St, Lomitas Ct, Magnolia Ct, Magnolia St, Oak Ave, Oakdell Dr, Olive St, St Francis Pl	None
Peninsula Family Service Haven Child Development Center	Bieber Ave, Del Norte Ave, Iris Ln, Market Pl, Pierce Rd, Van Buren Rd	None
Safari Kid Menlo Park	Baywood Ave, Blackburn Ave, Clover Ln, Marmona Dr, Mckendry Dr, Robin Way, Woodland Ave	Middlefield Rd, Willow Rd
Trinity Preschool (Trinity Church)	Cherry Ave, Pine St	Ravenswood Ave
Whole Kid School	Baywood Ave, Blackburn Ave, Clover Ln, Mckendry Dr, Robin Way, Santa Margarita Ave	Middlefield Rd, Willow Rd

Preschool eligibility is a question to confirm (slide 17)

Appendix: sign types compared

Device	Installed cost	Measured effect	Limits
Regulatory school speed limit sign	$175 to $500 each	Mean speed down 1 to 2 mph for a 5 mph cut (UC ITS)	Required for the limit to take effect
Radar speed feedback sign	$8,000 to $12,000 each	Mean speed down about 3 mph at the sign in school zones (NHTSA, 2021)	No accepted crash reduction factor, so not eligible for HSIP
Flashing beacon	$1,700 to $3,950, hardware	25 to 30% fewer vehicles above 35 mph (Assembly analysis)	Attention device only under the 2026 California MUTCD

One feedback sign costs as much as 16 to 24 regulatory signs on new posts.

Sources: NHTSA DOT HS 813 170 (2021); Caltrans Local Roadway Safety Manual 2026; Assembly Transportation Committee analysis of AB 382

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Appendix: data and methods

- **Zones and streets.** 500-foot buffers around school grounds from City GIS (2019 schools layer; preschool footprints approximate). 355 street segments, 21.0 miles.
- **Existing coverage.** Segments on streets named in Resolutions 6652 and 6761 for each site.
- **15 mph eligibility.** City Circulation class Local, two lanes or fewer, posted 30 or lower, not a state route. Approximates the residence district test.
- **Collisions.** City collision layer (five years ending September 2025) matched to the state CCRS database by date and location for ages; 43 of 44 matched.
- **Before and after.** CCRS crashes 2016-19 and 2022-25 within 100 feet of a zone street, assigned to the nearest segment.
- **Signs.** Three per through-street entry not already signed; one per junction between tiers; plate swap where a school sign stands within 150 feet.

Code and data: github.com/mzrascoff/mp-school-zones

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Title	Item type	Commission action
Santa Cruz Ave and Sand Hill Road Corridor Safety Project – Preliminary Findings	Informational	Feedback
Middlefield Road safe streets project	Regular	Recommendation
PW Departmental Projects Report Out	Informational	No action

Upcoming meeting dates and details:

- Possible Special Meeting for E-conveyance policy ad hoc subcommittee report out
- Special Meeting November 12 or 19, date TBD
- December 9, 2026

Public Works Update

Construction News

Every week, staff publish a Construction News Update that provides a summary of the City's construction activities. The document provides the location of the project, the activities for the week, and the contact information.
LINK -- https://www.menlopark.gov/Government/Departments/Public-Works/Engineering-Division/Construction-news

Budget and Capital Improvement Plan– As part of the annual budget process, staff presented proposals for both the operating and capital budgets. Below are the links to the City Council budget items for your reference.

1. 4/14/26 - L2-Update on the City's fiscal year 2025-26 Capital Improvement Plan
2. 5/12/26 - G2-Provide direction on the five-year capital improvement plan (watch video)
    a. Presentation
    https://docaccess.com/docviewer.html?url_hash=6fb649ad5692aa19a2ce45fee491bb44&domain=menlopark.gov
    b. Staff report
    https://docaccess.com/docviewer.html?url_hash=b5d0ee799075169eced9dc91facd04b3&domain=menlopark.gov
3. 5/28/26 – Public Budget Workshop
    https://www.menlopark.gov/Government/Departments/Administrative-Services/Finance/City-budget
4. 6/9/26 - G2-Hold public hearing on the proposed fiscal year 2026-27 budget and capital improvement plan; hold public hearing on vacancies, recruitment and retention; and consider and adopt a resolution to amend the fiscal year 2025-26 budget
5. 6/23/26 - K1-Consider and adopt resolutions for fiscal year 2026-27: adopting budget and capital improvement plan; establishing appropriations limit; amending salary schedule effective July 1, 2026

Upcoming City Council Agenda Topics: October 2026 – Copied from: https://docaccess.com/docviewer.html?url_hash=d660b0721dffa004e38a499c35cd6b38&domain=menlopark.gov

Tentative City Council Agenda

#	*Title*	*Department*	*Item type*	*City Council action*
1	Annual inflation protection adjustment of local minimum wage effective Jan. 1, 2027	ASD	Consent	Receive and file
2	Consider and adopt a resolution amending the salary schedule	ASD	Regular	Adopt resolution
3	Consider and adopt a resolution to update the user fee cost recovery policy	ASD	Regular	Adopt resolution
4	Closed session	CAO	Closed Session	No action
5	Financial review and summary of proposals for downtown development on Parking Plazas 1, 2 and 3	CDD	Study Session	Direction to staff
6	Amend MPMC Section 15.16.110 Subdivision Ordinance Front Setback	CDD	Public Hearing	First read/intro ordinance
7	Adopt amendments to MPMC Section 15.16.110 Subdivision Ordinance Front Setback	CDD	Consent	Second read/adopt ordinance
8	Review of Rental Assistance and Legal Assistance Programs	CDD	Regular	Approve
9	Proclamation: Latino Heritage Month	CMO	Proclamation	No action
10	Proclamation: Domestic Violence Awareness Month	CMO	Proclamation	No action
11	Proclamation: Cybersecurity Awareness Month	CMO	Proclamation	No action
12	Presentation: Sequoia Healthcare District	CMO	Presentation	No action
13	Presentation: San Mateo County Transportation Authority	CMO	Presentation	No action
14	Consider and adopt a resolution establishing a policy for Disruption of Remote Access During Public Open Meetings of Advisory Bodies	CMO	Consent	Adopt resolution
15	Proclamation: National Bullying Prevention Month	CMO	Proclamation	No action
16	Proclamation: United Against Hate Week	CMO	Proclamation	No action
17	Consider and adopt a resolution updating the event sponsorship policy	LCS	Consent	Adopt resolution
18	Authorize the Mayor to sign the City's response to the San Mateo County Civil Grand Jury Report, "Is Our Flock of ALPR Cameras Properly Tended?"	PD	Consent	Approve
19	Police department quarterly update / Q3 July – September 2026	PD	Informational	No action
20	Grant of easement to PG&E for utility service to West Bay Sanitary District Bayfront Recycled Water Facility	PW	Consent	Approve
21	Authorize the city manager to execute a license agreement with West Bay Sanitary District for extended sewer lines at Bedwell Bayfront Park	PW	Consent	Contract award or amend
22	Authorize the city manager to execute a maintenance agreement for median and right-of-way landscape maintenance services	PW	Consent	Contract award or amend
23	Downtown public plaza improvements	PW, CMO	Study Session	Direction to staff

STAFF REPORT

Complete Streets Commission
Meeting Date: **11/19/2026**
Staff Report Number: **26-009-CC**

Regular Business: **Provide feedback on the Santa Cruz Avenue and Sand Hill Road Corridor Safety Project**

Recommendation

Staff recommends that the Complete Streets Commission (Commission) provide feedback on the proposed preliminary design improvements for the Santa Cruz Avenue and Sand Hill Road Corridor Safety Project (Project).

Policy Issues

The Project is consistent with General Plan Circulation Element policies to improve bicycle and pedestrian safety (CIRC-1.7 and 1.8) and City's Vision Zero Action Plan (VZAP) goal to eliminate all traffic fatalities and serious injuries by 2040.

Background

In January 2024, the City adopted the VZAP that identified both Santa Cruz Avenue and Sand Hill Road corridors as high collision corridors. The City applied and was awarded a grant through the UC Berkeley Safe Transportation and Education Center (SafeTREC) to further evaluate safety needs along the corridors. SafeTREC in collaboration with key community stakeholders, performed a Complete Streets Safety Assessment (Attachment A) along portions of both corridors. Stakeholders, including staff from Hillview Middle School, Stanford University, City of Menlo Park Police Department, Safe Routes to School Champions, and Complete Streets Commission members played an active role throughout the safety assessment process. The CSSA report identified specific concerns about the safety for pedestrians and bicyclists particularly in relation to vehicle speeds and crossing challenges at side street stop-controlled intersections as well as the need to better accommodate commuters and recreational bicyclists while also accommodating pedestrian activity.

The City applied and was awarded 2024 Cycle 7 Measure A & W Pedestrian and Bicycle Program funding through the San Mateo County Transportation Authority Call for Projects (SMCTA). A total of $1,387,370 grant funds were awarded combined with a local match of $244,830 for the design and construction of safety improvements along both corridors. A design contract was awarded to Fehr & Peers to develop and provide design services for these improvements.

Analysis

The Project includes taking the preliminary findings from the SafeTREC audit and further investigating potential solutions with a review of existing conditions through field surveys, traffic counts including both speed and volumes, and collision history along the corridors. This work was compiled and potential solutions were developed applying Federal Highway Administration (FHWA) criteria. Following this process for both the Santa Cruz Avenue and Sand Hill Road, the following improvement options are recommended:

- Santa Cruz/Orange: Geometry modification of the intersection to provide separation between bicycles and vehicles.
- Santa Cruz/Olive: Installation of a bulb out, left turn restriction from Olive Alternate: bulb out only
- Santa Cruz/San Mateo: bulb out, left turn restriction for all legs, high visibility crosswalks Alternate: high visibility crosswalks and bulb out
- Santa Cruz/University: signal equipment upgrade
- Sand Hill/Sharon Park: high visibility crosswalks, green conflict bike lanes through intersection
- Sand Hill/Santa Cruz: protected intersection with green conflict bike lanes through intersection
- Sand Hill/Oak: bike box, separated bike lane on Oak, high visibility crosswalks, and green conflict bike lanes through intersection

Additional improvements throughout the corridors will be added as budget allows, such as green conflict bike lanes, high visibility crosswalks, and signage. The above improvements are projected to be accommodated within the existing Measure A&W funds awarded through the SMCTA Cycle 7 Bicycle and Pedestrian Call for Projects. As the design progresses and cost estimates are further refined, it is possible that some identified measures may have to be modified or eliminated to not exceed the budgeted grant funding. In addition, some permanent measures may have to be modified to provide a quick build alternative.

Commission Feedback and Next Steps

Staff is seeking Commission feedback on the proposed design. The recommended design concept will be taken to City Council for approval in early 2027, and the design is expected to be completed in Summer 2027. Construction will immediately follow.

Impact on City Resources

The Project is funded through the Cycle 7 SMCTA Measure A&W grant funds with a local match provided by the City.

Environmental Review

This action is not a project within the meaning of the California Environmental Quality Act (CEQA) Guidelines §§15378. Any future improvements identified by this study will undergo environmental review as needed.

Public Notice

Public notification was achieved by posting the agenda, with the agenda items being listed, at least 72

hours prior to the meeting. Postcards were also mailed to residents and property owners within 500 feet of the study areas on Santa Cruz Avenue and Sand Hill Road. In addition, changeable message signs as well as posters were placed along the corridors.

Attachments

A. City of Menlo Park Complete Streets Safety Assessment, September 2024

Report prepared by:
Jason Nesdahl, Senior Transportation Engineer

Report reviewed by:
Azalea Mitch, Public Works Director

Berkeley SafeTREC

City of Menlo Park
Complete Streets Safety Assessment

PS 24048

Issues, Opportunities, and Suggested Strategies



Final Report

September 2024

Disclaimer text. This report was produced in cooperation with the City of Menlo Park. Funding for this program was provided by a grant from the California Office of Traffic Safety (OTS) through the National Highway Traffic Safety Administration. The opinions, findings, and conclusions are those of the authors and not necessarily those of the OTS, the University of California, and/or the agencies supporting or contributing to this report. This report does not constitute a standard, specification, or regulation. The agency that is the subject of this report is hereby granted a non-exclusive right to copy and distribute this report for its own or its stakeholders' non-commercial use. All other uses of this report require written permission from the University of California, Berkeley Safe Transportation Research and Education Center (SafeTREC).

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City of Menlo Park
Complete Streets Safety Assessment

Issues, Opportunities, and Suggested Strategies

Final Report

September 2024

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LIST OF ABBREVIATIONS

ATA:	Active Transportation Assessment
BAC:	Blood Alcohol Concentration
CIM:	Crash Investigation Manual
CLEC:	California Law Enforcement Challenge
CHP:	California Highway Patrol
CAMUTCD:	California Manual on Uniform Traffic Control Devices
DAR:	Drug alcohol recognition
DRE:	Drug recognition expert
DUI:	Driving Under the Influence
GIS:	Geographic Information System
LTAP:	Local Technical Assistance Program
MOU:	Memorandum of Understanding
MPO:	Metropolitan Planning Organization
NHTSA:	National Highway Traffic Safety Administration
OTS:	Office of Traffic Safety
PCF:	Primary Crash Factor
PDO:	Property Damage Only
PIO:	Public Information Officer
POST:	Peace Officer Standards and Training
RMS:	Record Management System
RTPA:	Regional Transportation Planning Authority
RV:	Recreational Vehicle
SFST:	Standard Field Sobriety Test
SR:	State Route
SWITRS:	Statewide Integrated Traffic Records System
TOF:	Traffic Offender Fund
TTSA:	Tribal Transportation Safety Assessment
CVC:	California Vehicle Code

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APPENDIX D: STREET CONNECTIVITY

ACKNOWLEDGMENTS

The CSSA team thanks the agency staff and community members from City of Menlo Park who provided invaluable contributions to the benchmarking review and field audit to make the Complete Streets Safety Assessment in this community a success. Their knowledge and insight were instrumental to the completion of this project.

DISCLOSURES

This report was developed with the best information available to the authors at that time.

The report summarizes crash data reported in the Statewide Integrated Traffic Records System (SWITRS) retrieved from the Transportation Injury Mapping System (TIMS). The current version of 2022 and 2023 SWITRS data is provisional and is subject to change when it is finalized.

The benchmarking analysis aims to provide the City of Menlo Park with information on current best practices and how the city compares. Cities have differing physical, demographic, and institutional characteristics that may make certain goals or policies more appropriate in some jurisdictions than others. Ultimately, City of Menlo Park staff will need to determine where resources and efforts are best utilized to meet local development and infrastructure goals for people walking and biking.

The recommendations presented in this report are based on limited field observations and limited time spent in the City of Menlo Park by the CSSA technical evaluators. These recommendations are based on general knowledge of best practices in pedestrian and bicycle design and safety and are intended to guide local staff in making decisions for future safety improvement projects. The recommendations may not incorporate all factors that may be relevant to the pedestrian and bicyclist safety issues.

As this report is conceptual in nature, conditions may exist in the focus areas that were not observed and may not be compatible with recommendations in this report. Before finalizing and implementing any physical changes, staff may need to conduct more detailed studies or further analysis to refine or discard the recommendations in this report if they are found to be contextually inappropriate or appear not to improve pedestrian and bicyclist safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume, high speeds, physical limitations on space or sight distance, or other potential safety concerns.

EXECUTIVE SUMMARY

The City of Menlo Park staff requested that the Safe Transportation Research and Education Center at the University of California, Berkeley, conduct a Complete Streets Safety Assessment (CSSA) study for a corridor along Santa Cruz Avenue between University Drive and Orange Avenue, as well as a corridor along Sand Hill Road between Oak Avenue and Junipero Serra Boulevard within the city. The CSSA technical evaluator conducted the CSSA field visit for the City of Menlo Park on April 24, 2024 to observe and document field conditions.

The objectives of the CSSA are to improve pedestrian and bicycle safety and to enhance walkability and accessibility for all pedestrians and bicyclists in Menlo Park.

The CSSA is organized into three core activities:

1. Reviewing historical crash data and trends with an emphasis on crashes involving people walking and biking.
2. Conducting a benchmarking assessment of policies, programs, standards, and guidelines.
3. Conducting a complete streets field audit of specific locations with suggestions to enhance conditions for people walking and biking.

The report is organized into the following chapters:

1. Introduction
2. Safe System Approach
3. Background and Crash History
4. Benchmarking Analysis Results and Suggested Enhancements
5. Complete Streets Field Audit Results and Recommendations

Background

The City of Menlo Park is located in San Mateo County with a population of approximately 31,690. According to OTS rankings, in 2021, Menlo Park was ranked 12th out of 93 cities of similar population size for people killed or injured in a traffic crash (with a ranking of “one” indicating the worst). For pedestrians and bicyclists killed or injured in a crash, Menlo Park ranked 61/93 and 3/93 respectively. The city ranked 1/93 for bicyclists under age 15 killed and injured in a crash, indicating that Menlo Park was ranked the worst for bicyclists under aged 15 compared with similar sized cities in the state. With regards to speed related crashes, Menlo Park ranked 4/93, indicating a high ranking compared with similar sized cities. This ranking is based on several weighted factors including population, daily vehicle miles traveled, crash records, crash trends, and others. For more information on OTS rankings, please refer to https://www.ots.ca.gov/data-sources/.

The Safe System Approach

The U.S. Department of Transportation, California Department of Transportation, and California Office of Traffic Safety have all adopted the Safe System Approach. The Safe System Approach considers five elements of a safe transportation system — safe road users, safe vehicles, safe speeds, safe roads, and post-crash care — in an integrated and holistic manner. Creating a Safe System means shifting a major share of the responsibility from individual road users to those who design, operate, and maintain the transportation network. The Safe System Approach anticipates human mistakes by designing and managing road infrastructure to keep the risk of mistakes low, and if a mistake does lead to a crash, reducing the impact to the human body to limit the potential for fatality or serious injury.

The CSSA project team identified and selected the Santa Cruz Avenue corridor between University Drive and Orange Avenue, and the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive for comprehensive walk audits based on crash history and conversations with the applicant to understand local safety concerns. During the field assessment, the CSSA project team integrated the Safe System elements into a discussion with participants to prompt safety improvements at the study locations. To develop comprehensive recommendations that address the Safe System Approach, the CSSA project team also reviews responses from local agency staff to the benchmarking survey, especially those related to local plans and policies that are already in place or underway.

The CSSA focuses primarily on infrastructure-related countermeasures, with an emphasis on improving the safety of people walking and biking. Prioritizing safe target speeds and changing road geometry to manipulate crash angles can help reduce the risk of fatal and severe injuries. Through the benchmarking assessment, the CSSA team also provides some non-infrastructure insight on safety countermeasures such as education, outreach, and post-crash care. All elements of the Safe System Approach can be applied to corridor and intersection studies moving forward to create an approach that creates layers of protection for all road users.

Benchmarking Analysis and Potential Improvements

To assess pedestrian and bicyclist safety conditions in the City of Menlo Park, the CSSA team conducted a benchmarking analysis to understand how the existing conditions compared to national best practices. Through an electronic benchmarking survey conducted with City staff, the CSSA team identified their active transportation policies, programs, and practices and categorized these into three groups:

- Areas where the city is exceeding national best practices
- Areas where the city is meeting national best practices
- Areas where the city appears not to meet national best practices

While suggestions are provided for each category, local agencies have differing physical, demographic, and institutional characteristics that may make certain goals or policies more appropriate in some jurisdictions than others. Ultimately, city or local agency staff may determine where resources and efforts are best utilized for meeting local development and infrastructure goals for pedestrians and bicyclists.

Suggestions for potential improvement or further enhancement to the City of Menlo Park's existing programs and policies are presented in Chapter 4.

Complete Streets Audit and Potential Improvements

The Santa Cruz Avenue corridor between University Drive and Orange Avenue and the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive were selected for a comprehensive walk audit based on crash history and conversations with city staff to understand local safety concerns. Positive practices, as well as pedestrian and bicycle safety and accessibility issues were identified during the field audit. Many of the strategies suggested in this report are appropriate for grant applications, including Office of Traffic Safety (OTS) or Active Transportation Program (ATP) funding. The strategies may also be incorporated into a Transportation master plan, documents that could set forth bicycle, pedestrian, and streetscape policies for the city, identify, and prioritize capital improvement projects.

The suggestions presented in this report are based on limited field observations and time spent in the community by the CSSA team. These suggestions, which are based on general knowledge of best practices in traffic engineering and planning in pedestrian and bicycle design and safety, are intended to guide staff in making decisions for future safety improvement projects in the City of Menlo Park, and may not incorporate all factors which may be relevant to walking and bicycling safety issues.

As this report is conceptual in nature, conditions may exist in the focus areas that were not observed and may not be compatible with suggestions in this report. Before finalizing and implementing any physical changes, city staff may choose to conduct more detailed studies or further analysis to refine or discard the suggestions in this report if they are found to be contextually inappropriate or appear not to improve bicycling safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume or speeds, physical limitations on space or sight distance, or other potential safety concerns.

1. INTRODUCTION

1.1. OBJECTIVE OF THE ASSESSMENT

The Complete Streets Safety Assessment (CSSA) is a statewide program of the University of California, Berkeley Safe Transportation Research and Education Center (SafeTREC). Through this program, the CSSA project team conducts crash data analysis, a benchmarking review of local policies, programs and practices, and a transportation safety assessment of select sites to identify safety improvements that align with the Safe System Approach.

The City of Menlo Park Transportation Division requested that the Safe Transportation Research and Education Center (SafeTREC) at University of California, Berkeley, conduct a Complete Streets Safety Assessment (CSSA) for the city. The objective of the CSSA is to improve safety and accessibility for all people walking and biking in the City of Menlo Park.

As part of the city's Circulation Elements update of their general plan, the city is addressing the California State requirement of planning for "Complete Streets" by putting a complete streets policy in place. Through this policy, the city will plan for multimodal transportation networks that meet the needs of all users of roadways in upcoming developments, as well as projects currently in the planning and development stages. This circulation element incorporates the policy to create equitable and actionable programs, policies, and designs for a sustainable future. Menlo Park's Circulation Element classifies Santa Cruz Avenue as a minor arterial with high intensity, pedestrian-oriented retail street. Sand Hill Road is classified as a primary arterial and a major thoroughfare with limited mixed commercial frontage.

Per City's staff request, the CSSA project team selected the Santa Cruz Avenue corridor between University Drive and Orange Avenue, and the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive for a comprehensive walk audit. These areas were selected also based on crash history and conversations with the applicant to understand local safety concerns. During the field assessment, the CSSA project team integrated the Safe System elements into a discussion with participants to prompt safety improvements at the study locations.

The CSSA project team facilitated a kickoff conference call with local staff on March 15, 2024 to better understand the community's needs. The CSSA technical evaluators conducted a site visit with local staff on April 24, 2024 to observe and document field conditions. Following the field audit, the CSSA technical evaluators shared with the local agency staff their preliminary recommendations for site-specific improvements based on their observations and current best practices for designing transportation systems for people walking and biking.

This report provides an overview of the Safe System Approach and summarizes the findings of the crash data assessment, the benchmarking analysis, and the observations and recommendations from the field audit. Additionally, this report includes four appendices covering pedestrian and bicyclist improvement options, a resource list, and street connectivity.

2. SAFE SYSTEM APPROACH

2.1. BACKGROUND

Traffic crashes can irreversibly change the course of human lives, affecting victims, their families and loved ones, and society overall. The costs of traffic crashes include substantial economic and societal impacts, such as medical costs, lost productivity, and reduced quality of life. Cities, counties, and tribes need to work to solve the complex problem of traffic safety in their communities to reduce the number of injuries and deaths. The Complete Streets Safety Assessment (CSSA) program provides an opportunity to integrate the Safe System Approach (SSA) into programs, policies, and design decisions related to active transportation improvements to address the underlying road safety concerns in communities statewide. Moreover, the goal of a Complete Street is to ensure the safe and adequate accommodation of all road users.

The Safe System Approach to road safety began internationally as part of the Vision Zero proclamation that no one should be killed or seriously injured on the road system.[1, 2] It is founded on the principle that people make mistakes and that the road system should be adapted to anticipate and accommodate human mistakes and the physiological and psychological limitations of humans.[3] The Safe System Approach acknowledges the vulnerability of the human body — in terms of the limited amount of kinetic energy transfer a body can withstand — when designing and operating a transportation network to minimize serious consequences of crashes, and ensures that if crashes occur, they "do not result in serious human injury."[4] The ability to implement the Safe System Approach across all sectors may vary by local jurisdiction based on the commitment of the agencies involved and their available resources.

Countries that have adopted the Safe System Approach have had significant success reducing highway fatalities, with reductions in fatalities between 50% and 70%.[5] The Safe System Approach is the foundation for the National Roadway Safety Strategy released by the United States Department of Transportation in 2022. Statewide, the California Office of Traffic Safety and Caltrans have both adopted the Safe System Approach and a Vision Zero goal for road safety planning. The principles and elements of the Safe System Approach are shown in Figure 2-1.

[1] Johansson, R. (2009). Vision Zero - Implementing a policy for traffic safety. *Safety Science*, 47, 826-831.

[2] Tingvall, C., & Haworth, N. (1999). *An Ethical Approach to Safety and Mobility*. Paper presented at the 6th ITE International Conference Road Safety and Traffic Enforcement. 6-7 September 1999, Melbourne, Australia.

[3] Belin, M.-Å., Tillgren, P., & Vedung, E. (2012). Vision Zero - a road safety policy innovation. *International Journal of Injury Control and Safety Promotion*, 19, 171-179.

[4] World Health Organization (2011). Retrieved on: June 3, 2024 Decade of Action for Road Safety 2011-2020 (PDF).

[5] World Resources Institute (2018). Sustainable and Safe: A Vision and Guidance for Zero Road Deaths. Retrieved on June 3, 2024 https://www.wri.org/publication/sustainable-and-safe-vision-and-guidance-zero-road-deaths

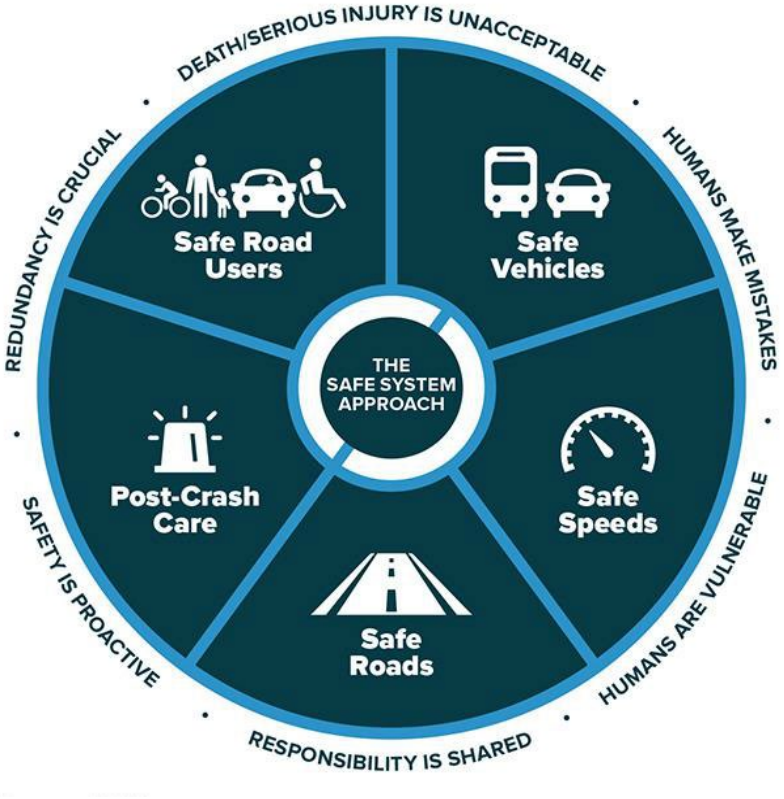


Figure 2-1: U.S. Department of Transportation Safe System Approach Graphic

Preliminary Statewide Integrated Traffic Records System (SWITRS) crash data for 2022 suggests that traffic crashes caused nearly 4,500 preventable deaths and over 200,000 injuries in California. People walking, biking, and rolling are especially vulnerable to death or serious injury when a crash occurs. Through collective action on the part of all roadway system stakeholders — from traffic engineers, planners, public health professionals, and vehicle manufacturers to law enforcement and everyday users — a Safe System Approach can be established to anticipate human mistakes, with the goal of eliminating fatal and serious injuries for all road users.

2.2. INFLUENCE ON ROADWAY DESIGN AND OPERATION

Kinetic energy has long been identified as the cause of injury, such that if a crash occurs, the peak forces at the point of contact determine the degree of injury.[6] [7] [8] Managing the forces of kinetic energy to a level that the human body can tolerate is critical to the Safe System Approach.[9]

[6] Haddon, W. (1980). Advances in the epidemiology of injuries as a basis for public policy. Public Health Reports, 95(5), 411–421.

[7] De Haven, H. (1942). Mechanical analysis of survival in falls from heights of fifty to one hundred and fifty feet. Reproduced in Injury Prevention, 6(1), 62–68 (2000).

[8] Gangloff, A., 2013. Safety in accidents: Hugh DeHaven and the development of crash injury studies. Technol. Cult. 54 (1), 40–61.

[9] Tools like the Safe System Project-Based Alignment Framework developed by the Federal Highway Administration provide practitioners to assess and compare roadway locations and potential improvements through a SSA lens.

In the transportation system, kinetic energy risk is present based on three factors:

1. Exposure: the presence (or potential presence) of two or more users or a user and a fixed object
2. Likelihood: the chance that a conflict occurs between those users/objects based on roadway design, intersection control, or other contextual conditions
3. Severity: the intensity of the energy should the conflict occur (driven by speed, mass, and angle), which is not mitigated by other factors (such as in-vehicle occupant protection)

Systemic assessments of roadway networks can identify and proactively address when these risk factors are high, meaning the consequence of a mistake could be severe.

The Institute of Transportation Engineers (ITE) and the Road to Zero Coalition state that to anticipate human mistakes, best practices for a Safe System seek to:

- Separate users in a physical space (e.g., sidewalks, dedicated bicycle facilities)
- Separate users in time (e.g., pedestrian scrambles, dedicated turn phases)
- Alert users to potential hazards
- Accommodate human injury tolerance through interventions that reduce speed or impact force.

Recent guidance from the Federal Highway Administration (FHWA) characterizes engineering and infrastructure countermeasures and strategies along a hierarchy to help transportation practitioners prioritize efforts that will facilitate increased application of the Safe System Approach principles, as seen in Figure 2-2. Specifically, the Safe System Roadway Design Hierarchy breaks down efforts into four tiers and seeks to: (1) eliminate severe conflicts through physical separation; (2) reducing vehicle speed; (3) manage conflicts in time; and (4) increase attentiveness and awareness.[10] The FHWA further clarifies that a combination of strategies from multiple tiers would be the most effective, reinforcing the Safe System principle that redundancy is crucial.

[10] Hopwood, C., Little, K., and D. Gaines. (2024). Safe System Roadway Design Hierarchy: Engineering and Infrastructure-related Countermeasures to Effectively Reduce Roadway Fatalities and Serious Injuries (FHWA-SA-22-069). US Department of Transportation, Washington, D.C.



Figure 2-2: Federal Highway Administration Safe System Roadway Design Hierarchy Graphic

Nearly one in three (31.7% of the total 4,428) traffic fatalities in California in 2022 was associated with excessive speed or traveling at speeds deemed unsafe for the driving conditions.[11] In 2021 through AB43, California authorized local governments to reduce speed limits on many roads, including state highways, in business and residential areas and other roads identified as "safety corridors" without following the "85th percentile rule" which often caused transportation agencies to raise speed limits. This new authority aligns with the Safe System approach and allows local jurisdictions to target speeds based on user context. Moreover, Caltrans issued Design Information Bulletin (DIB) 94 in 2024 related to "complete streets," which provides local agencies more flexibility to design context-sensitive facilities to better serve the needs of all travelers, including guidance for selecting treatment tools based on speed and volume context.

For vulnerable users, such as people walking, biking, or otherwise not in a vehicle, speed is a determining factor in survivability. Figure 2-3 illustrates how a person's chance of surviving being struck by a vehicle increases as speed decreases: from 10% at 40 miles per hour (mph) to 50% at 30 mph, and 90% at 20 mph. Furthermore, as drivers increase the speed of the vehicle, their peripheral vision narrows. This results in decreased depth perception and a reduced ability to perceive others on the road, such as people walking and biking. Reducing speed in the presence of vulnerable users is a key Safe System strategy.

[11] National Highway Traffic Safety Administration (2023). *Traffic Safety Facts: California 2018-2022*.

Approaches to reducing speed include:

- Physical roadway designs (width, horizontal alignment) to limit speeds
- Traffic calming treatments that induce slower speeds
- Traffic signal timing that minimizes high-speed flow
- Traditional or automated enforcement[12] that discourages speeding



Figure 2-3: Speed and Crash Survivability Graphic. Increasing driver vehicle speed reduces vulnerable road user crash survivability and narrows the driver's field of vision.

Many traffic safety efforts continue to lean on individuals to "do the right thing" to stay safe rather than apply lessons learned from the public health sector to invest in systemwide safety interventions. Ederer (2023) proposed the Safe Systems Pyramid,[13] seen in Figure 2-4, which acknowledges kinetic energy as the root cause of injury and introduces a public health-based intervention framework to address this cause with strategies that require the least individual effort and have the broadest population impact. For example, interventions that require more individual effort (e.g., driver education programs, educational campaigns) have the least impact on improving systemwide safety, while those that change the context of transportation have the largest impacts on safety (e.g., affordable housing near transit, zoning reform). This framework provides guidance when transportation decision-makers cannot do it all, giving priority to projects and interventions that will most impact safety outcomes.[14]

[12] Assembly Bill (AB) 645 was signed into law in October 2023 authorizing six California cities (Glendale, Long Beach, Los Angeles, Oakland, San Francisco, and San Jose) to pilot automated speed cameras for five years.

[13] Ederer, D., Thompson Panik, R., Botchwey, N., & Watkins, K. (2023). Adaptation of the Health Impact Pyramid into the Safe System Pyramid. *Transportation Research Interdisciplinary Perspectives. Vol. 21.* https://doi.org/10.1016/j.trip.2023.100905.

[14] Mitman, M. et al, (2024). Why and How to Focus on Kinetic Energy Risk, *ITE Journal: The Journey to Safer Communities.* 39-45. https://ite.ygsclicbook.com/pubs/itejournal/2024/march-2024/live/index.html#p=38



Figure 2-4: The Safe Systems Pyramid adapts public health principles, like the Health Impact Pyramid and Hierarchy of Controls, to more fully address roadway safety needs.

Strategies at the base of the Safe Systems Pyramid, above, focus on reducing and limiting exposure upstream that affects where, when, and how people enter the transportation system and become exposed to risk. This includes Vehicle Miles Traveled (VMT) mitigation, in terms of both the duration of travel as well as the location and mode. Middle-of-the-pyramid strategies seek opportunities, on top of exposure mitigation, to limit conflicts through the separation of users in space and time, and limit severity through speed management and reduced angles of crashes. Less preferred strategies in this framework focus on educational interventions that are conditional on individual behavior change. In alignment with the SSA, education can be effective when combined with efforts from other tiers in the pyramid to strengthen redundancies.

Conventional safety practice is primarily reactive, largely based on data provided to engineers and planners in crash reports. However, the primary purpose of crash reports is to document the moment of the crash and the time immediately preceding it to determine “fault” across the involved parties (such as needed for insurance claims). As a result, it shifts the responsibility for the crash to an individual, rather than assessing opportunities to intervene at the system level. The Safe Systems Pyramid recommends focusing on root causes of the crash by considering the Ws of safety:

- Who was involved; what is their personal story?
- Where were they traveling from and to? Why were they on this road?
- Why were they traveling on that day, at that time?
- Why did they use their selected travel mode?
- Why was the road they were traveling on designed the way it is?

Creating a Safe System means shifting a major share of the responsibility from individual road users to those who design the road transport system. “Individual road users have the responsibility to abide by laws and regulations”[15] and do so by exhibiting due care and proper behavior in the transportation system. While road users are responsible for their own behavior, a Safe System requires a shared responsibility with those who design, operate, and maintain the transportation network, including the automotive industry, law enforcement, elected officials, and government bodies.[16] In a Safe System, roadway system designers and operators take on the highest level of ethical responsibility to look at crashes holistically and systemically, and recognize that crashes are not only caused by a driver’s error.

2.3. INTEGRATING THE SAFE SYSTEM APPROACH INTO THE CSSA

The Safe System Approach involves anticipating human mistakes by designing and managing road infrastructure to keep the risk of such mistakes low, and if a mistake does lead to a crash, reducing the impact to the human body and the likelihood of fatality or serious injury. The first step in incorporating the Safe System Approach into the CSSA is a benchmarking analysis. The benchmarking analysis, based on the Safe System elements, evaluates the local agency’s programs and policies and how their existing efforts incorporating best practices related to access and comfort for people walking and biking compare with national best practices. The aim is to fully institutionalize the SSA in the local agency’s program, practices, and policies, rather than on a case-by-case basis, and by identifying and removing barriers to its adoption.

The applicant and CSSA project team identified focus areas (i.e., intersections and corridors) to conduct a comprehensive walk audit based on crash history and conversations with the applicant to understand local safety concerns. During the field assessment, the CSSA project team integrated the Safe System elements into a discussion with participants to prompt safety improvements at the study locations, considering the “Ws” of safety noted above.

The CSSA field assessment focused primarily on infrastructure-related countermeasures, with an emphasis on improving the safety of people walking and biking. Specifically, the CSSA seeks to reduce speeds to a target speed for the road context, separate road users in space and time for that context, and change road geometry to manipulate crash angles as proactive strategies to address kinetic energy risk for fatal and serious injuries.

This CSSA report compiles a set of considerations for the local agency to both institutionalize a Safe System Approach into programs, practices, and policies, and to directly apply the SSA lens through field assessments and countermeasure selection.

[15] World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved on: June 3, 2024 *Decade of Action for Road Safety 2011-2020* (PDF).

[16] World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved on: June 3, 2024 *Decade of Action for Road Safety 2011-2020* (PDF).

3. BACKGROUND AND CRASH HISTORY

Menlo Park is located in San Mateo County with a population of approximately 31,690. Among its residents, the majority, 60.3% percent, identified as White, while about 17.3% identified as Hispanic or Latino.[17] The median household income in Menlo Park in 2022 was $198,273, higher than the statewide median household income of $91,905.[18] The city had an estimated daily vehicle miles traveled on local roads of 148,705 in 2021.[19] The vicinity of Menlo Park is shown in Figure 3-1.

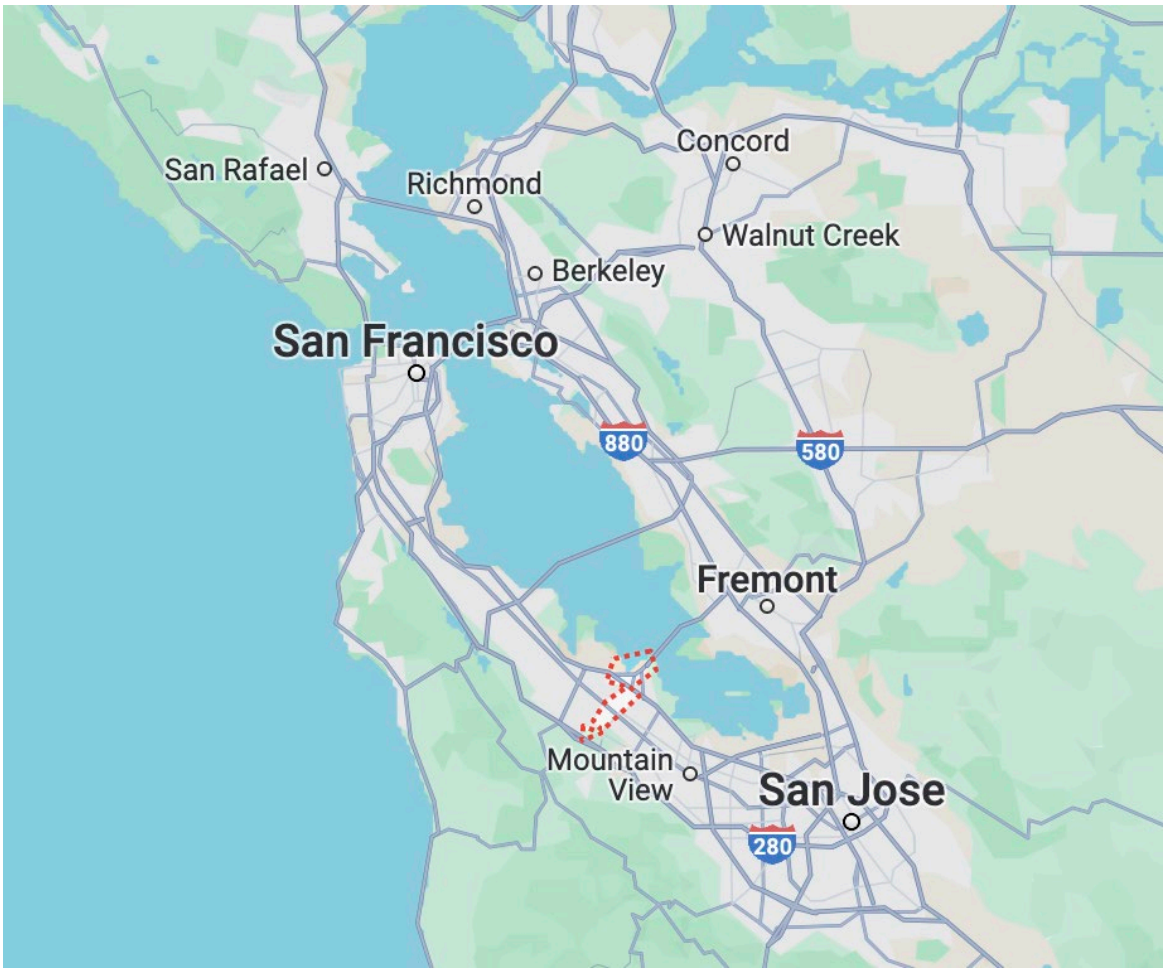


Figure 3-1: Menlo Park Vicinity Map

[17] QuickFacts. United States Census Bureau. Retrieved from https://www.census.gov/quickfacts/fact/table/

[18] Profiles. United States Census Bureau. Retrieved from https://data.census.gov/profile/

[19] California Office of Traffic Safety. OTS Crash Rankings. Retrieved from https://www.ots.ca.gov/media-and-research/crash-rankings/.

3.1. OVERVIEW OF PEDESTRIAN AND BICYCLIST SAFETY

One of the goals of the Complete Streets Safety Assessments is to make walking and biking safer and more accessible for all residents and visitors in Menlo Park. This section presents a summary of traffic crashes by statewide ranking, in addition to detailed analyses of crashes involving pedestrians and bicyclists to determine high-risk groups. High-priority crash locations and unsafe behaviors are also identified, and the importance of underreported and near-miss crashes is discussed.

Office of Traffic Safety Ranking for Pedestrian and Bicycle Crashes

The California Office of Traffic Safety (OTS) maintains crash rankings to facilitate comparison between cities with similar sized populations to identify and address potential emerging or ongoing traffic safety issues. The rankings are based on the Empirical Bayesian (EB) Ranking Method, which gives weights to various factors, including population, vehicle miles traveled, and crash counts. Rankings are available for incorporated cities and involve only local streets and state highways within the city limits. Counties are also assigned a statewide ranking. Data for the OTS rankings are taken from the Statewide Integrated Traffic Records System (SWITRS), the California Department of Transportation, and the California Department of Finance. The most current OTS statistics (2021) grouped Menlo Park within group D, as compared with 93 cities in California with a population between 25,001-50,000.

OTS crash rankings are only indicators of potential problems and there are many external factors that may either understate or overstate a city's ranking. Per the OTS rankings, in 2021, Menlo Park was ranked 12th out of 93 cities of similar population size for people killed or injured in a traffic crash (with a ranking of "one" indicating the worst). For pedestrians and bicyclists killed or injured in a crash, Menlo Park ranked 61/93 and 3/93 respectively. Menlo Park ranked 1/93 for bicyclists under age 15 killed and injured in a crash, indicating that Menlo Park was ranked the worst for bicyclists under age 15 compared with similar sized cities. With regards to speed related crashes, Menlo Park ranked 4/93, indicating a high ranking compared with similar sized cities.

3.2. PEDESTRIAN AND BICYCLE CRASH DATA

Crash data is vital to compete for safety improvement funding at the state and federal levels. The Statewide Integrated Traffic Records System (SWITRS), maintained by the California Highway Patrol is the state's official traffic records database, and captures reported crashes that result in injury or death. The 2022-2023 SWITRS data used is provisional as of June 2024 and subject to change before it is finalized. The CSSA team retrieved SWITRS crash data for San Jose from the Transportation Injury Mapping System (TIMS) database for 2019 through 2023. TIMS is a tool developed by SafeTREC to provide quick, easy, and free access to SWITRS which has been geo-coded by SafeTREC to make it easy to map crashes. The data presented below includes police-reported crashes that occurred within the city limits.

During the five-year period from 2019 to 2023, there were 157 crashes involving pedestrians or bicyclists in Menlo Park, including three fatal crashes and 14 serious injury crashes. The majority (88%) of the crashes occurred on local roads.

Pedestrian Crashes

From 2019 to 2023, there were 48 crashes involving pedestrians in Menlo Park. Among the 53 victims of these pedestrian crashes, three people were killed and three were seriously injured. The majority of pedestrian crashes resulted in minor injury,[20] at 88%, or 42 crashes. The majority of victims (94%) in pedestrian crashes were people walking. In Menlo Park, females (57%) were more likely to be injured in pedestrian crashes than males, which is dissimilar from county, state, and national trends. Over one-third (36%) of victims in pedestrian crashes were age 65 or older. The top Primary Collision Factor (PCF) violations were a driver's failure to yield the right-of-way to a pedestrian, speeding, pedestrian failure to yield to a driver, and unsafe turning.

Figure 3-2 shows the spatial distribution of pedestrian crashes by severity. Fatal and serious injury crashes were distributed primarily in the northern part of the city with three crashes, including two crashes near the intersection of US-101 and Marsh Road, and another near the Bayfront Expressway, and in Central Menlo Park with two crashes. Two-thirds of the fatal and serious injury pedestrian crashes took place on a state highway, compared with 21% of all pedestrian crashes in the city. Many minor injury pedestrian crashes were concentrated in downtown Menlo Park. Pedestrian crashes were clustered on Oak Grove Avenue (seven crashes), University Drive (six crashes), Santa Cruz Avenue (four crashes), and El Camino Real (four crashes).

[20] Minor injury is the sum of two victim-degrees of injury categories: suspected minor injury and possible injury.

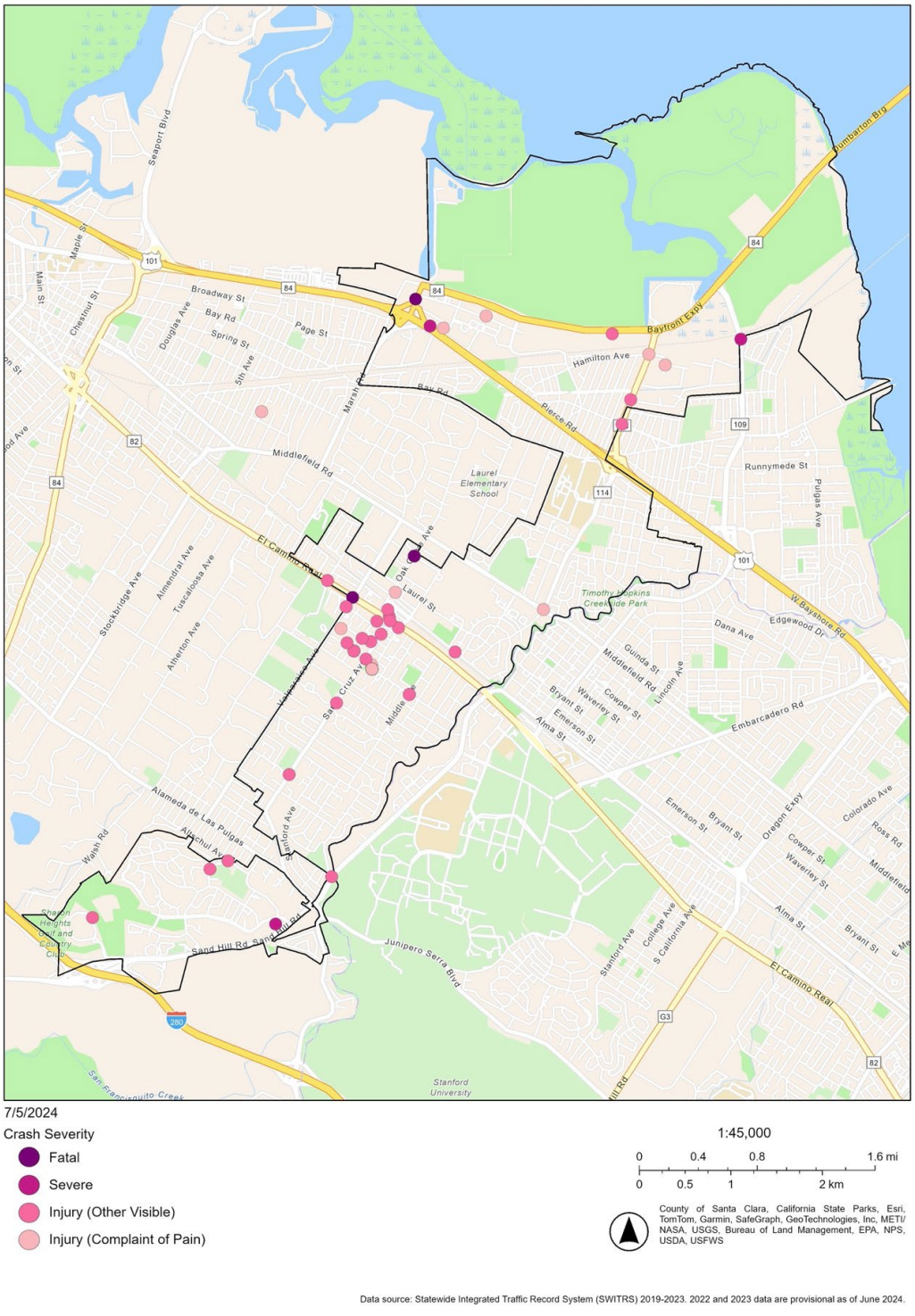


Figure 3-2: Map of Pedestrian Crashes in Menlo Park, 2019-2023

Figures 3-3 and 3-4 show an analysis of pedestrian-related crashes in Menlo Park.

Figure 3-3 shows the distribution of pedestrian crashes by time of day and day of the week. Crashes were much more likely to occur on a weekday than a weekend and during daylight (73%) when the weather was clear (90%). The majority of pedestrian crashes took place on Tuesday and Wednesday (44%), and between noon and 6:00 p.m., (48%). About 15% of pedestrian crashes occurred when it was dark with street lights, while another 8% of crashes were in the dark with no street lights.

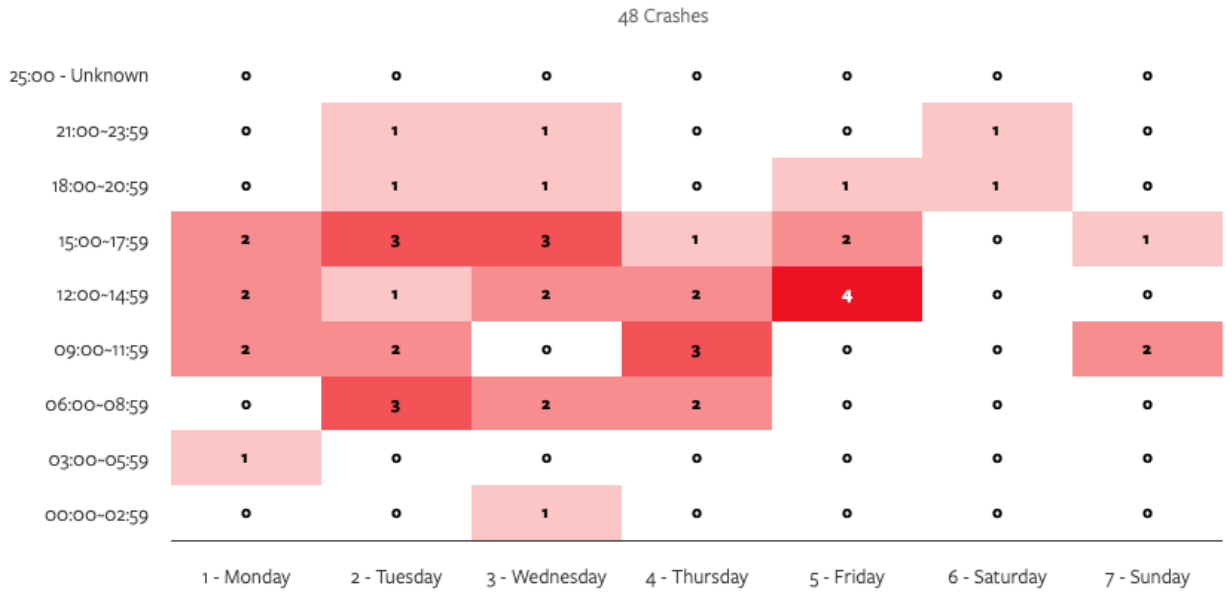


Figure 3-3: Pedestrian Crashes by Day of Week and Time of Day in Menlo Park, 2019-2023

Figure 3-4 shows the distribution of pedestrian crashes by pedestrian action. The majority of pedestrian crashes, 46%, occurred when someone was crossing in a crosswalk, followed by in the road including shoulders at 29%.

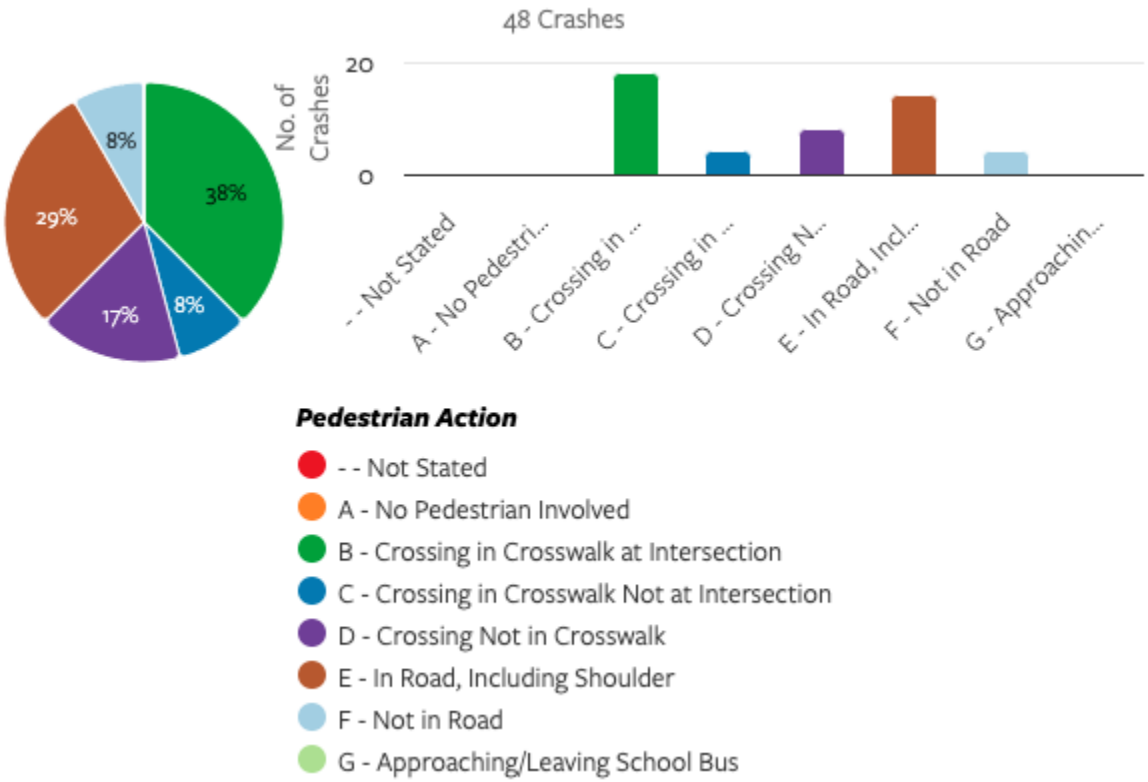


Figure 3-4: Pedestrian Crashes by Pedestrian Action in Menlo Park, 2019-2023

Bicycle Crashes

From 2019 to 2023, there were 111 crashes involving bicycles in Menlo Park. Among the 117 people injured in these crashes, 11 people were seriously injured, while no one killed. The majority of bicycle crashes resulted in minor injury[21] at 90%, or 100 crashes. The vast majority of victims in these crashes were bicyclists, accounting for 96% of people injured. Of people injured, 71% were male. Over 40% of victims were age 19 or younger, and 9% were age 65 and older. The top Primary Collision Factor (PCF) violations were improper turning (26%), unsafe speed (22%), and automobile right-of-way (22%).

Figure 3-5 shows the spatial distribution of bicycle crashes by severity. Serious injury crashes were distributed throughout the city with two crashes each on Santa Cruz Avenue and Willow Road. Almost all of the serious injury bicycle crashes, 91%, occurred on local roads. Bicycle crashes were clustered along Willow Road (14 crashes), Santa Cruz Avenue (9 crashes) and on Oak Grove Avenue (seven crashes). Only 8% of bicycle crashes occurred on a state highway.

[21] Minor injury is the sum of two "victim degree of injury" categories: suspected minor injury and possible injury.

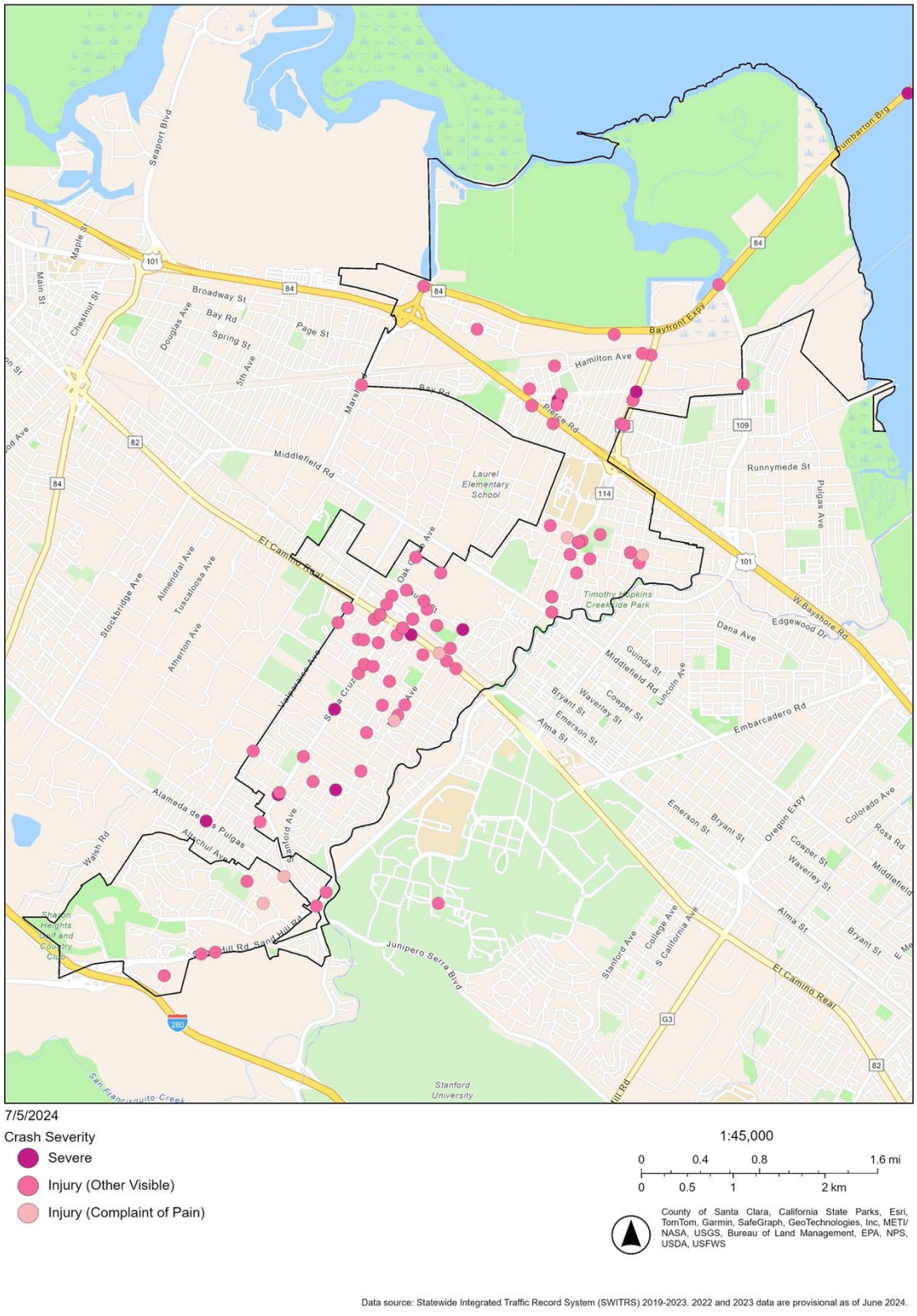


Figure 3-5: Map of Bicycle Crashes in Menlo Park, 2019-2023

Figure 3-6 shows the distribution of bicycle crashes by time of day and day of the week. Crashes were much more likely to occur on a weekday than a weekend, and during daylight (86%) when the weather was clear (87%). The majority of bicycle crashes occurred on Monday, followed by Wednesday and Friday, accounting for 21%, 20%, and 18% respectively. Crashes peaked between 6:00 a.m. and 8:59 a.m. at 33 crashes, and between 3:00 p.m. and 5:59 p.m. at 31 crashes. The windows with the highest number of crashes were Monday morning between 6:00 a.m. and 8:58 a.m. and Friday afternoon between 3:00 p.m. and 5:59 p.m. About 9% of bicycle crashes occurred when it was dark with street lights.

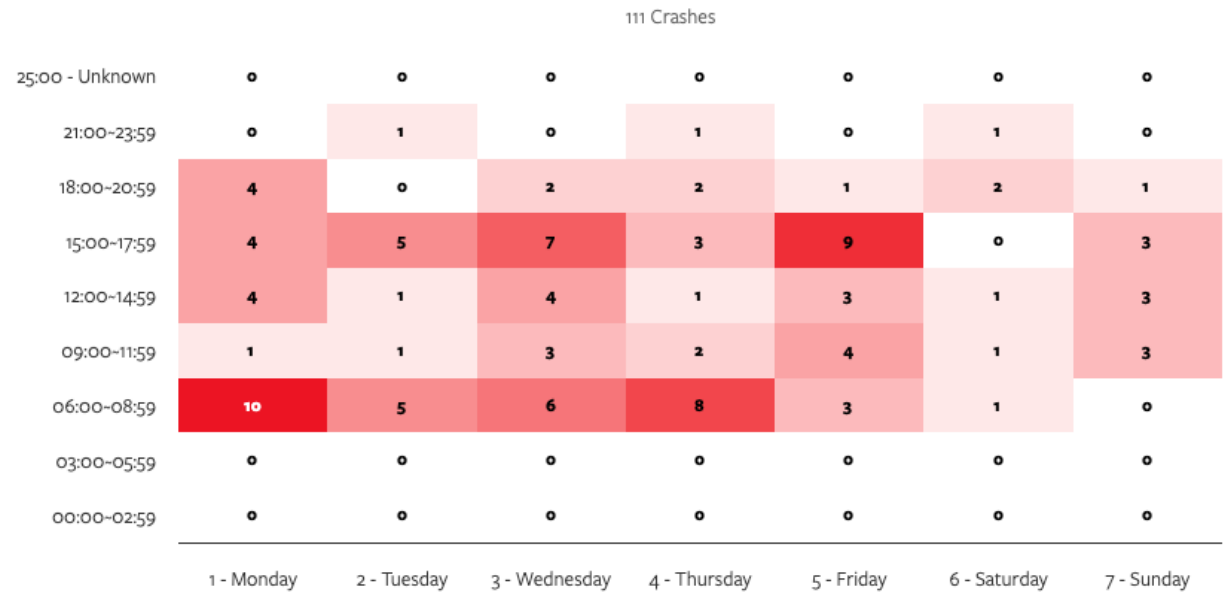


Figure 3-6: Number of Bicycle Crashes per Day of Week per Time in Menlo Park, 2019-2023

Figure 3-7 shows the distribution of bicycle crashes by crash type. The majority of bicycle crashes, 71%, were reported as other,[22] followed by broadside (18%).

[22] According to the California Highway Patrol Crash Investigation Manual (HPM 110.5), "other" is selected for a crash where a vehicle is involved with a bicycle.

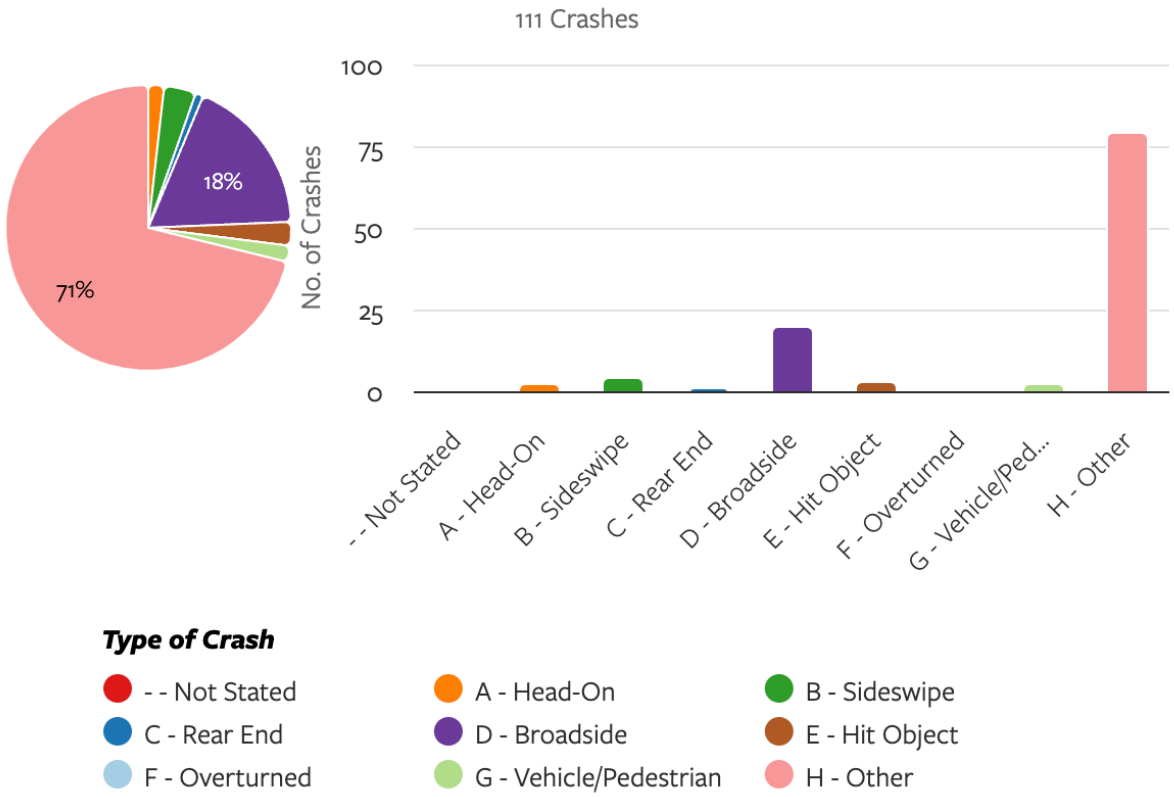


Figure 3-7: Number of Bicycle Crashes by Type of Crash in Menlo Park, 2019-2023

3.3. FOCUS AREAS

The focus areas for the Menlo Park CSSA study include intersections and corridors in the downtown and southern portions of the city.

Study areas in the downtown portion of Menlo Park include the following corridors and intersections:

- Santa Cruz Avenue near St. Raymond Catholic Elementary School
- Santa Cruz Avenue and University Drive
- Santa Cruz Avenue and San Mateo Drive
- Santa Cruz Avenue and Olive Street
- Santa Cruz Avenue and Orange Avenue

Study areas in the southern portion of Menlo Park include the following intersections:

- Sand Hill Road and Oak Avenue
- Sand Hill Road and Santa Cruz Avenue
- Sand Hill Road and Sharon Park Drive
- Santa Cruz Avenue and Junipero Serra Boulevard

Pedestrian Crashes in and around the Study Focus Areas

The following figures show the pedestrian crashes that occurred in the focus areas of this study.

Figure 3-8 shows three pedestrian crashes on Santa Cruz Avenue in the focus area between 2019 and 2023, all of which resulted in minor injuries. The three crashes occurred at the focus intersections of Santa Cruz Avenue and University Drive, Santa Cruz Avenue and Windsor Drive near St. Raymond Catholic Elementary School, and Santa Cruz Avenue and Elder Drive, near the study focus area.

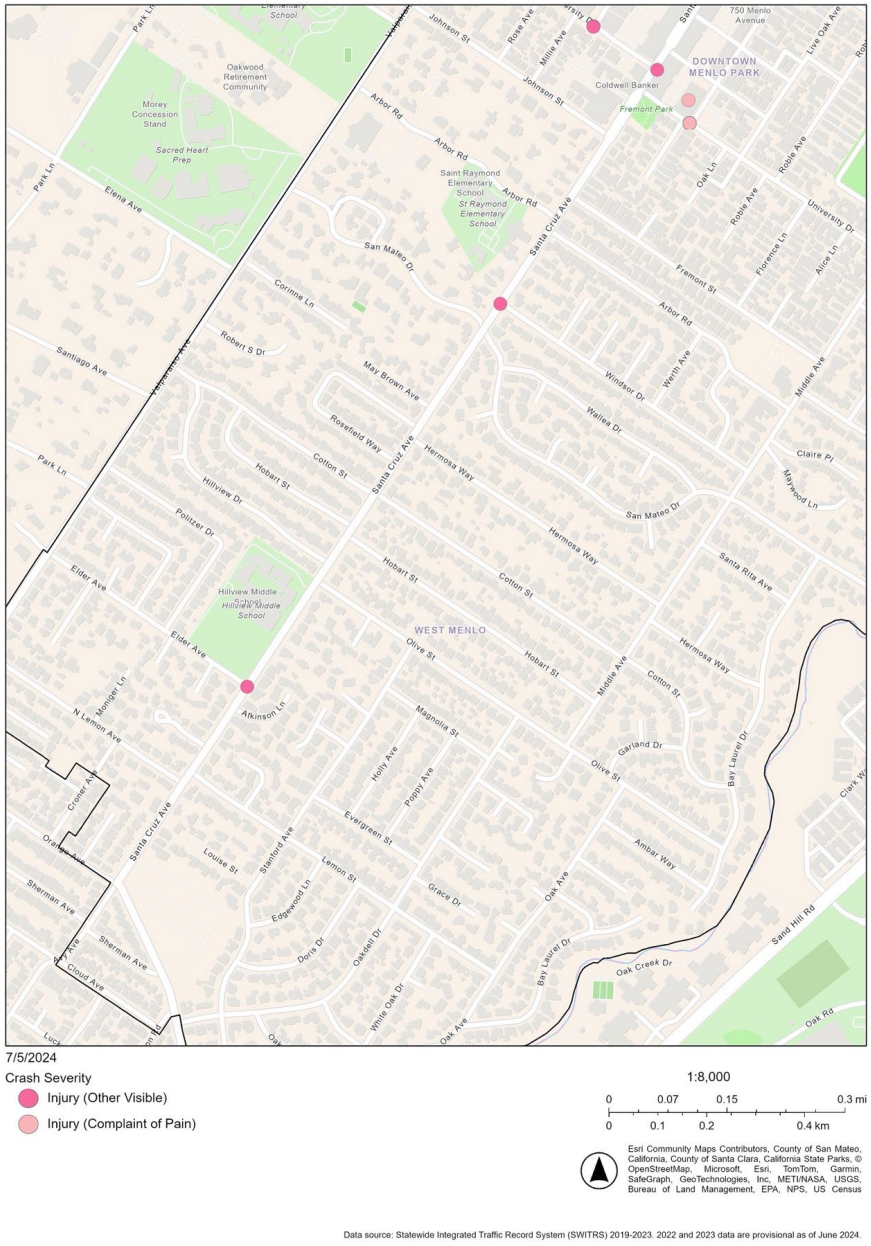


Figure 3-8: Pedestrian Crashes in and around Focus Areas in Downtown Menlo Park, 2019-2023

Figure 3-9 shows the pedestrian crashes in the southern portion of Menlo Park. In the southern portion of Menlo Park, there was one severe crash at the intersection of Sand Hill Road and Sharon Park Drive.

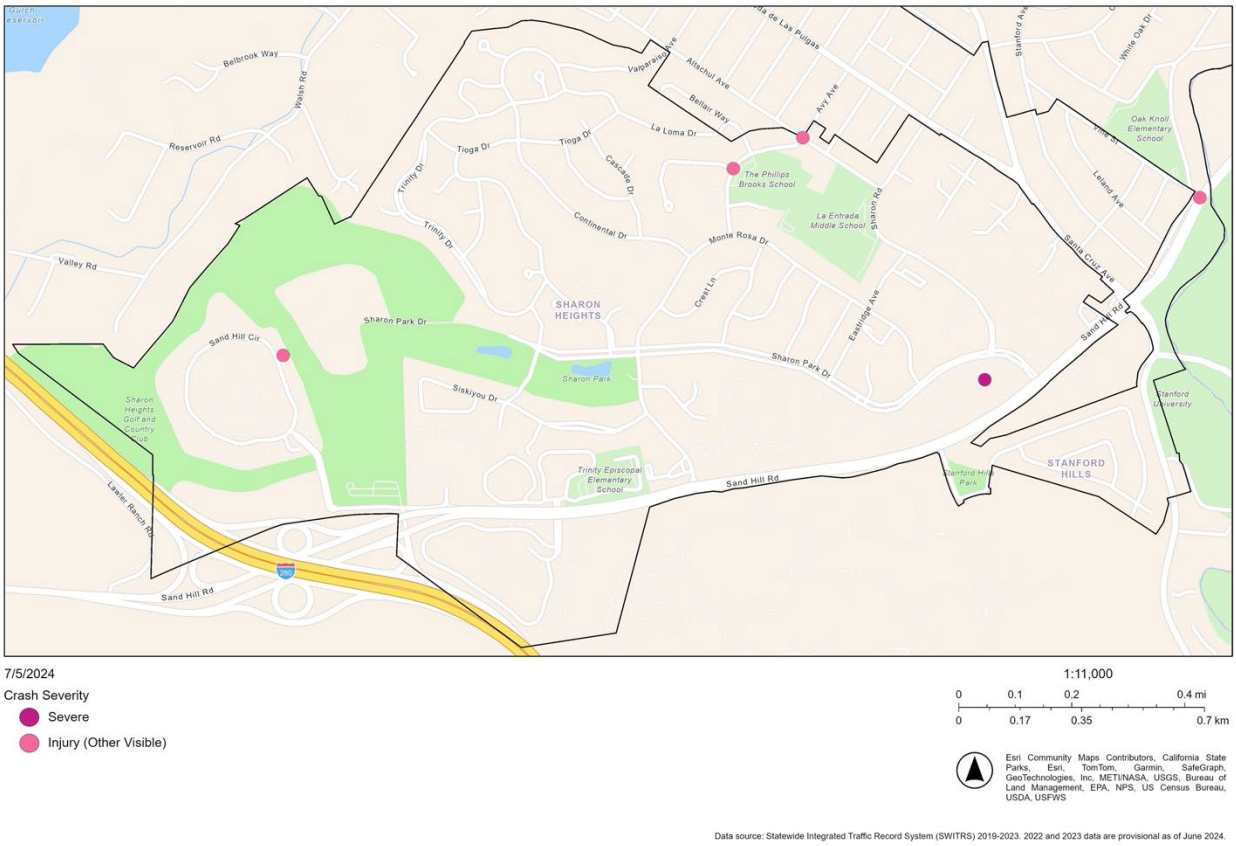


Figure 3-9: Pedestrian Crashes in and around Focus Areas in Southern Menlo Park, 2019-2023

Bicycle Crashes in and around the Study Focus Areas

Figure 3-10 shows the bicycle crashes on the study corridor of Santa Cruz Avenue between 2019 and 2023. There were seven bicycle crashes on this corridor, including two crashes that resulted in serious injuries. Of the two serious injury bicycle crashes, one occurred at the focus intersection of Santa Cruz Avenue and San Mateo Drive, and the second at the intersection of Santa Cruz Avenue and Lemon Street, near the focus intersections.

Of the five injury bicycle crashes, one took place at the focus intersection of Santa Cruz Avenue and University Drive, and another occurred at the intersection of Santa Cruz Avenue and Johnson Street, on the focus corridor of Santa Cruz Avenue near St. Raymond Catholic Elementary School. Of the three remaining bicycle crashes, one occurred at each of the following intersections: Santa Cruz Avenue and Hillview Drive, Santa Cruz Avenue and Lemon Drive, and Santa Cruz Avenue and Sherman Avenue.

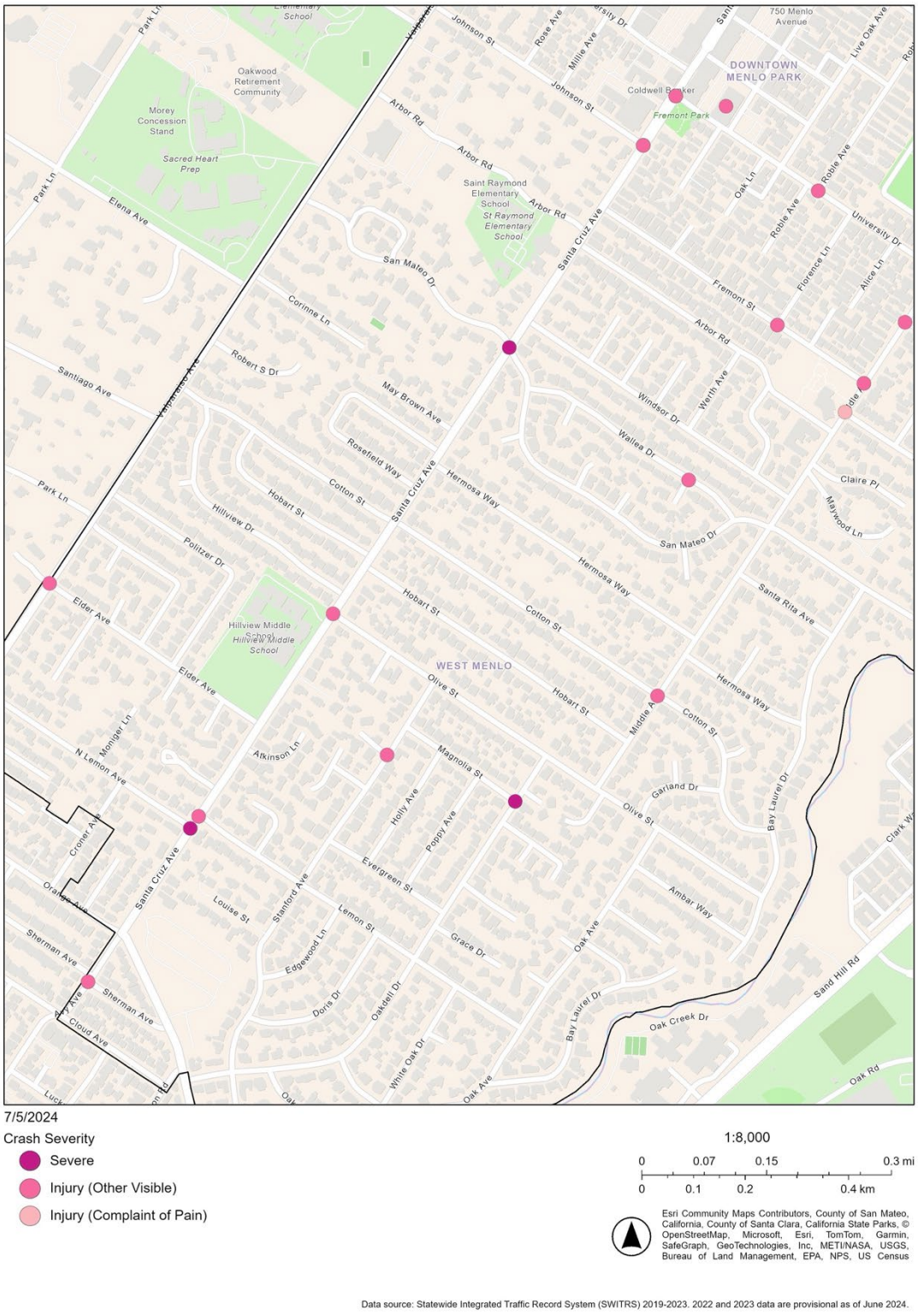


Figure 3-10: Bicycle Crashes in and around Focus Areas in Downtown Menlo Park, 2019-2023

Figure 3-11 shows bicycle crashes in the southern portion of Menlo Park. There were four minor injury bicycle crashes on Sand Hill Road, and none at the focus intersections. The four minor crashes occurred at the intersections of Sand Hill Road and Monte Rosa Drive, Sand Hill Road and Saga Lane, Sand Hill Road and Santa Cruz Avenue, and Sand Hill Road and Leland Avenue.

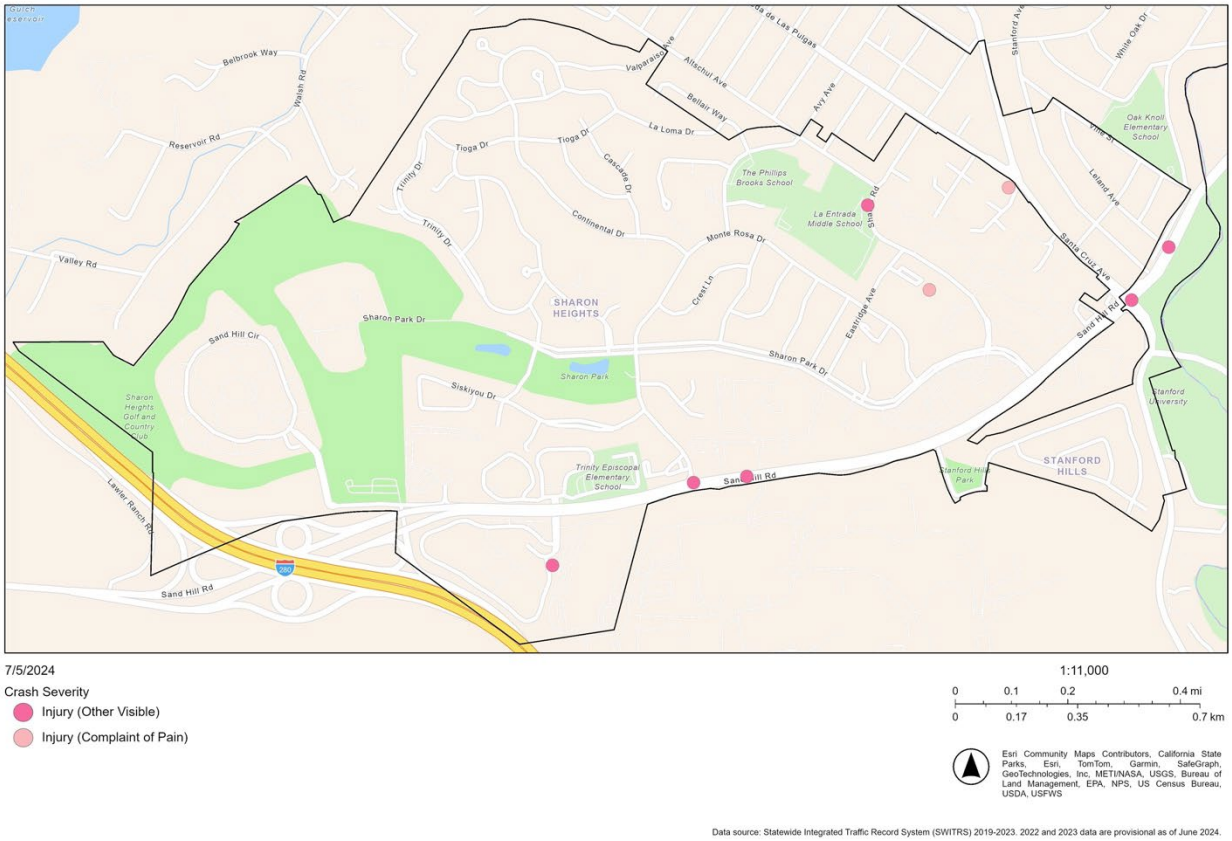


Figure 3-11: Bicycle Crashes in and around Focus Areas in Southern Menlo Park, 2019-2023

3.4. STREET STORY

Despite the best efforts, pedestrian and bicycle crash underreporting is common. Research suggests that a crash is less likely to be reported if there is no injury, little property damage, or only one party is involved.[23, 24, 25] Street Story (https://streetstory.berkeley.edu/) is a crowdsourced community engagement tool developed by UC Berkeley SafeTREC that allows residents, community groups, and agencies to collect information about traffic crashes, near-misses, general hazards, and safe locations to travel. Once a record has been entered, the information is added

[23] Stutts, J.C. and W.W. Hunter (1998). Police reporting of pedestrians and bicyclists treated in hospital emergency rooms. Transportation Research Record J. Transportation Research Board. 1998 (1635), 88-92. Available at: https://safety.fhwa.dot.gov/ped_bike/docs/00144.pdf

[24] Sciortino, S. et al. (2005). San Francisco pedestrian injury surveillance: mapping, under-reporting, and injury severity in police and hospital records. Accident Analysis & Prevention, 37(6), 1102-1113. doi: 10.1016/j.aap.2005.06.010

[25] Loo, B.P. and K. Tsui (2007). Factors affecting the likelihood of reporting road crashes resulting in medical treatment to the police. Injury Prevention, 13(3), 186-189. doi: 10.1136/ip.2006.013458

to a map and aggregate table of publicly accessible data. Staff can use this free tool to collect information from residents for local needs assessments, transportation safety planning efforts, safety programs, and project proposals.

Jurisdictions can create custom boundaries through the Street Story tool to collect data for local needs assessments or to support local traffic safety planning efforts, safety programs, and project proposals. At the time of this report, five reports were input in Street Story for Menlo Park. Among the Street Story reports, there were one crash report, one near-miss, two hazards, and one safe place to walk or bike report. For hazard reports, the top reported reasons were: signs, signals or markings not working or missing; people don't yield; and people drive at unsafe speeds.



Figure 3-12: Street Story Report Map

4. BENCHMARKING ANALYSIS RESULTS & SUGGESTED ENHANCEMENTS

To assess pedestrian and bicycle safety conditions in Menlo Park, the CSSA team conducted a benchmarking analysis to understand how the site's existing conditions compares with current national best practices, including consistency with the Safe System Approach. Through a holistic view of first anticipating human mistakes and keeping impact energy levels to the human body at tolerable levels, the Safe System Approach aims to eliminate fatal and serious injuries for all road users.[26]

An electronic questionnaire was sent to the CSSA site's staff with an optional interview. Their responses are indicated by the orange-highlighted text in the benchmarking matrix seen in tables 4-1 through 4-5. The benchmarking questionnaire was separated into five categories:

- Enhancing Safety through Accessibility
- Policies and Programs
- Safety Data Collection and Assessment
- Pedestrian and Bicycle Network Planning and Design
- Pedestrian and Bicycle Support Programs

Each benchmarking category addresses one or more of the Safe System Approach elements (Safe Road Users, Safe Vehicles, Safe Speeds, Safe Roads, and Post-Crash Care) while also incorporating best practices related to access and comfort for people walking and biking. Suggestions for better aligning each topic with best practice benchmarks are also noted for the City of Menlo Park staff's consideration.

The CSSA team compared staff's benchmarking questionnaire responses for each category against national best standards. The CSSA team also reviewed the city's website and relevant documents to identify the city's pedestrian and bicycle policies, programs, and practices. Based on these findings, the CSSA team assigned one of three ratings to each category:

- Exceeds national best practices
- Meets national best practices
- Does not meet national best practices

Where the City of Menlo Park staff did not provide a response, the CSSA team did not assign a rating. Suggestions are provided for each category. However, Menlo Park has differing physical, demographic, and institutional characteristics that may make certain goals or policies more appropriate in some jurisdictions compared with others. Ultimately, city staff may determine where resources and efforts are best utilized to meet local development and infrastructure goals for pedestrians and bicyclists.

[26] Goughnouor, E. et a. (2021). Primer on Safe System Approach for Pedestrians and Bicyclists. FHWA-SA-21-065. Federal Highway Administration, Washington, D.C. Available at: https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa21065.pdf

4.1. ENHANCING SAFETY THROUGH ACCESSIBILITY

To improve traffic safety, it is important to consider the needs of all road users. This may include removing obstacles that prevent people with disabilities from traveling safely and comfortably by separating users in time and space, designing road networks to make road users more visible, or improving driver education and vehicle technologies. Key areas to consider in this category are safe road users and safe roads.

Table 4-1: **Benchmarking Analysis for Enhancing Safety through Accessibility**

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Implementation of Americans with Disabilities Act (ADA) Improvements	Uses Public Right-of-Way Accessibility Guidelines (PROWAG) for ADA improvements with consistent installation practices	Has clear design guidelines but no regular practices for ADA compliance	Has minimal design guidelines and practices related to ADA requirements
2. ADA Transition Plan for Streets and Sidewalks	Has an ADA transition plan in place and an ADA coordinator	Partial or outdated ADA transition plan or an ADA coordinator	No transition plan or ADA coordinator

4.1.1 Implementation of Americans with Disabilities Act (ADA) Improvements

Implementation of ADA improvements is key to making walking accessible and safe for everyone, regardless of ability or age. U.S. Access Board Public Right-of-Way Accessibility Guidelines

Suggestions for Potential Improvement

- Continue adding ADA ramps at intersections that currently lack them and upgrade non-compliant ramps.
- Develop an ADA improvement program for items such as dual curb ramps, truncated domes, and audible pedestrian signals that apply consistent treatments. The program may provide an inventory, prioritization plan, and funding source for such improvements.

4.1.2 ADA Transition Plan for Streets and Sidewalks

ADA Transition Plans identify gaps and issues in the city's current ADA infrastructure, prioritize projects for implementation, and set forth the process for bringing public facilities into compliance with ADA regulations. Transition Plans typically include a range of locations, such as public buildings, sidewalks, ramps, and other pedestrian facilities. Some agencies also have ADA coordinators, who are responsible for administering the plan and reviewing projects for accessibility considerations.

Suggestions for Potential Improvement

- Consider prioritizing sub-areas within the city that exhibit the greatest pedestrian activity.
- Expand the ADA Transition Plan to include the public right-of-way, particularly the downtown area, other priority development areas, bus stops, and schools.
- Consider having a part-time, trained ADA coordinator to review projects for accessibility and implement the ADA Transition Plan.
- Provide ADA standards and best practice training for engineering staff at all levels.
- Ensure safety for all users is prioritized and accessibility is maintained during construction and road maintenance projects. It is vital to ensure that dedicated space is maintained for vulnerable users during construction and road maintenance projects.
- Create a policy that details how to maintain accessibility and provide designated space for pedestrians and bicyclists through a Construction Management Plan (CMP).

4.2. POLICIES AND PROGRAMS, SAFETY IMPLEMENTATION PLANS AND POLICIES

Policies, programs, and plans play a critical role in keeping people safe on California roadways. Collectively, they signal a proactive approach to identifying risks and strategies to mitigate them. Key areas to consider in this category are safe road users, safe roads, and safe vehicles.

Table 4-2: Benchmarking Analysis for Policies and Programs, Safety Implementation Plans and Policies

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Transportation Advisory Committee	Has a formal, active/ on-going Transportation Advisory Committee guided by a charter or mission that includes the safety of vulnerable road users and whose activities focus on improving pedestrian and bicycle safety.	Has an ad-hoc Transportation Advisory Committee or one not guided by a charter or mission that specifically includes safety of vulnerable road users. Note: City's Planning Commission may act as Transportation Advisory Committee	Does not have a Transportation Advisory Committee
2. Traffic Calming or Speed Management Program	Has a speed management program that is reviewed annually alongside the CIP project list. Major arterials and neighborhood corridors include proactive speed management strategies and countermeasures are implemented to reach safe target speeds.	Has a traffic calming program, but funding and implementation of countermeasures are ad-hoc and reactive.	Explores traffic calming features other than speed humps.

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
3. Speed Limit Setting	Regularly surveys speed and identifies locations with high deviation from target speeds. The agency uses best practices for speed management in combination with allowances from AB 43 to lower speed limits. Lower speed limits are implemented using a consistent approach that prioritizes areas with historic underinvestment. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB43	Seeks to include 15 mph speed limits in school zones or commercial corridors.	Continues to use the 85th percentile to set speed limits.
4. Safe Routes to Schools	Has an ongoing Safe Routes to Schools program that is included as part of the agency's safety monitoring and is integrated with other policies and programs.	Has obtained funding for recent projects but has no communitywide Safe Routes to Schools program.	Does not have a Safe Routes to Schools program and has not obtained recent funding.
5. Systemic Signalized Intersection Enhancements	Has a systemic signalized intersection enhancement program that follows a Safe System-based framework and proactively implements FHWA's Proven Safety Countermeasures to manage speed and crash angles and to consider risk exposure.	Reactively implements Proven Safety Countermeasures at signalized intersections.	Does not routinely implement proven safety countermeasures (LPIs, protected left turns, roundabouts, medians, countdown signals, etc.) at signalized intersections.

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
6. Systemic Enhancements for Unsignalized and Uncontrolled Crossings	Has a crosswalk enhancement program that proactively implements a Safe Transportation for Every Pedestrian (STEP)-consistent countermeasure at uncontrolled crossings.	Has a crosswalk policy that is STEP-consistent but is only reactive to implementing Proven Safety Countermeasures.	Does not have a policy or set practices for addressing crosswalk installation or enhancements using Proven Safety Countermeasures.
7. Safe System Policy	Has a Safe System policy with redundancy built in for transportation projects with a checklist for the full set of incorporation of the Safe System elements. The policy includes all users and modes, affects new construction and maintenance, considers local context, and provides guidance for implementation.	Has a Safe System policy but does not identify how redundancy can be incorporated through the Safe System elements.	Does not have a Safe System policy.

4.2.1 Transportation Advisory Committee

Advisory committees serve as important sounding boards for new policies, programs, and practices. Responding to public concerns through public feedback mechanisms represents a more proactive and inclusive approach to bicycle and pedestrian safety compared with a conventional approach of reacting to crashes.

Suggestion for Potential Improvement

Continue working with the Complete Streets Commission with regularly scheduled meetings to bring all transportation projects to the general committee to provide opportunities for focused complete streets discussion.

4.2.2 Traffic Calming or Speed Management Program

Traffic calming programs and policies set forth a consensus threshold for neighborhood requests and approvals, as well as standard treatments and criteria.

Suggestions for Potential Improvement

The city is developing a "Slow Streets" program that aims to be community-informed and data-driven. This will replace the traditional Neighborhood Traffic Management Program.

- Develop the "Slow Streets" program.

- Increase the amount of dedicated funding available for traffic calming each year.
- Expand the city's traffic calming toolbox to include other tools, such as raised crosswalks, raised intersections, chicanes, and traffic diverters. The city should review their speed management program annually alongside the CIP project list to identify major arterials and neighborhood corridors for proactive speed management.
- Expand the city's practices to include proactive traffic calming measures instead of only responding to community requests. The city could consider allocating a portion of funding to proactive traffic calming, such as on bicycle boulevard streets or safe routes to schools, and then allocate the remaining funding to react to specific community requests.
- The following resources offer traffic calming best practices:
    - Traffic Calming to Slow Vehicle Speeds | US Department of Transportation
    - Traffic Calming Guidelines from the City of Danville (PDF)
    - Neighborhood Traffic Management Program from the City of Anaheim
    - ITE Technical Resources — Traffic Calming Measures

4.2.3 Speed Limit Setting

Agencies should regularly survey speeds and identify locations with high deviations from target speeds. Local municipalities use best practices for speed management from AB 43 to lower speed limits. Implementing lower speed limits is accomplished by using a consistent approach that prioritizes areas with historic underinvestment.

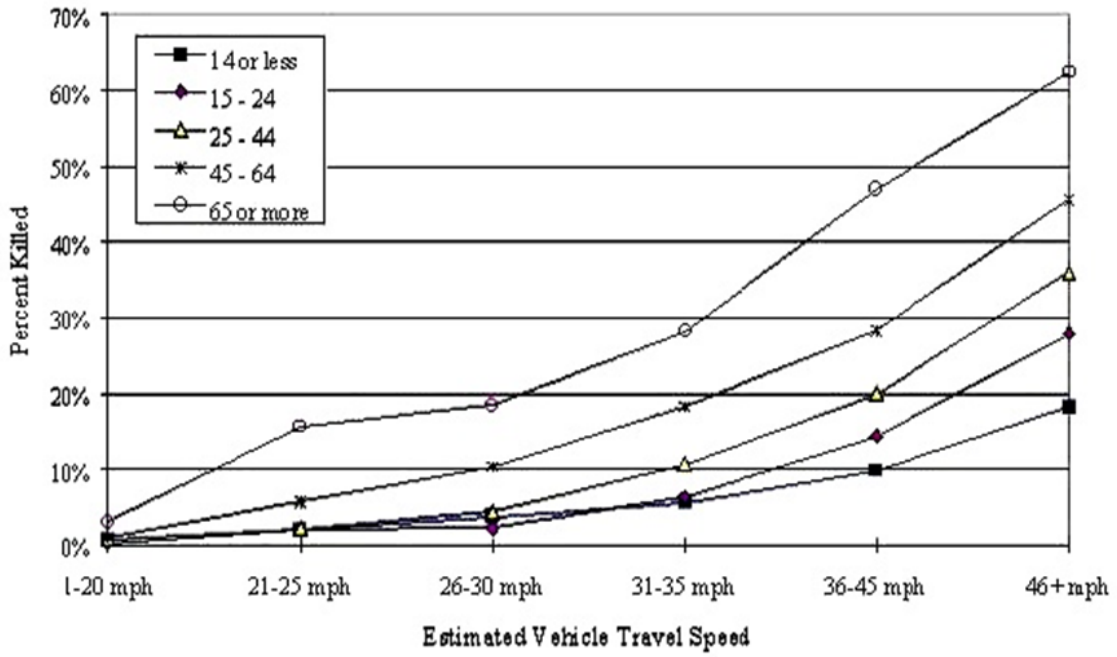


Figure 4-1: Relationship Among Vehicle Speed, Victim Age, and Fatalities

Suggestions for Potential Improvement

- Install traffic calming measures, signal coordination, and similar tools to maintain slower speeds appropriate for an urban community, particularly on streets that will be reviewed in the next speed survey.
- After complete streets improvement and other safety measures are installed, conduct off-cycle speed surveys to review the speed limit and determine whether it needs to be reduced based on the improvements.
- Consider pedestrian volumes and known complete streets safety issues when setting speed limits and employ traffic calming strategies in locations where speed surveys suggest traffic speeds are too high for pedestrian and bicyclist safety.
- Ensure complete streets design standards have appropriate target design speeds for urban areas and do not contribute to a routine need for traffic calming.
- Redesign existing 15mph school zones to align with target speed." to align with the recommendation in the City's Vision Zero Action Plan.
- Additional information on AB 43:
    - San Francisco's Speed Limit Setting in Business Districts: News Release: San Francisco Lowers Speed Limits in Targeted Business Districts Under New State Law

4.2.4 Safe Routes to Schools

Safe Routes to School (SRTS) programs encourage children to safely walk or bicycle to school. The Marin County Bicycle Coalition was an early champion of the concept, which has spread nationally (refer to best practices at https://www.saferoutesinfo.org). SRTS programs are important both for increasing physical activity (and reducing childhood obesity) and for reducing morning traffic associated with school drop-off (as much as 30% of morning peak hour traffic).

Suggestions for Potential Improvement

- Continue with the city's existing active Safe Routes to School Task Force that meets regularly to monitor efforts and identify new opportunities.
- Consider a plan for all schools to conduct walk audits, identify recommended safety improvements, and secure funding for those improvements.

4.2.5 Systemic Signalized Intersection Enhancements

A systemic signalized intersection enhancement program follows a Safe System-based framework and proactively implements FHWA's proven safety countermeasures to manage speed and crash angles and to consider risk exposure. Proven safety countermeasures at signalized intersections include Leading Pedestrian Intervals (LPIs), protected left turns, roundabouts, medians, and countdown signals.

Suggestion for Potential Improvement

Consider establishing a systemic signalized intersection enhancement program that follows a Safe System-based framework. FHWA provides the following resources:

- Federal Highway Administration: Safe System-Based Framework and Analytical Methodology for Assessing Intersections
- Federal Highway Administration: Proven Safety Countermeasures (PDF)
- Federal Highway Administration: Safe Transportation for Every Pedestrian (STEP)National Cooperative Highway Research Program: Application of Pedestrian Crossing Treatments for Streets and Highways
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- Federal Highway Administration: Proven Safety Countermeasures (PDF)
- Federal Highway Administration: Safe Transportation for Every Pedestrian (STEP)National Cooperative Highway Research Program: Application of Pedestrian Crossing Treatments for Streets and Highways

4.2.6 Systemic Enhancements for Uncontrolled and Unsignalized Intersection Crossings

A systemic crosswalk enhancement program proactively implements a Safe Transportation for Every Pedestrian (STEP)-consistent countermeasure at uncontrolled crossings.

The City of Menlo Park has a crosswalk policy: https://menlopark.gov/Government/Departments/Public-Works/Transportation-Division/1-City-Transportation-policies-and-plans

Suggestions for Potential Improvement

- Consider developing a treatment selection “tool” to assist staff with the identification of applicable treatments in a given context.
- When crosswalk enhancements are identified, add them to a prioritized list that will be upgraded over time as funding is available.
- Federal Highway Administration STEP Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (PDF)

4.2.7 Safe System Policy

A Safe System policy with redundancy built in for transportation projects includes all users and modes, affects new construction and maintenance, considers local context, and provides guidance for implementation.

The city has adopted a Vision Zero Action Plan that follows the Safe Systems approach.

Suggestion for Potential Improvement

Implement the Safe System Approach, based on the following resources:

- National Safety Council: Safe System Approach
- California Office of Traffic Safety: What is a Safe System Approach
- SafeTREC: Safe System Strategies for Bicyclists and Pedestrians Toolkit (PDF)
- SafeTREC: Conducting Community Engagement with a Safe System Lens (PDF)
- Vision Zero Network: Demystifying the Safe System Approach
- California Active Transportation Safety Information Pages (CATSIP): Safe System Approach to Road Safety
- U.S. Department of Transportation Federal Highway Administration: Zero Death and Safe System
- U.S. Department of Transportation: Safe Streets and Road Users for All (SS4A) Grant Program

4.3. SAFETY DATA COLLECTION AND ASSESSMENT

Collecting and assessing data improves effectiveness, efficiency and overall system performance. Data can inform how to build safer roads for all modes of travel, including walking, biking, rolling, and driving. Key areas to consider in this category are safe road users.

Table 4-2: **Benchmarking Analysis for Safety Data Collection and Assessment**

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Collection of Pedestrian and Bicyclist Volumes	Collects pedestrian and bicyclist volumes routinely with intersection counts and has a GIS database of counts. The database identifies key origin and destination locations that identifies patterns and needs in agencies policies and programs, especially in underserved communities	Collects pedestrian and bicyclist volumes on a project-by-project basis, but not routinely. Key origins and destinations are identified in a Bike, Pedestrian, or Active Transportation Plan but need to be updated	Does not collect pedestrian and bicycle volumes
2. Inventory of Bikeways, Parking, Informal Pathways, and Key Bicycle Opportunity Areas	Maintains and routinely updates an AI-based inventory of missing and existing bikeways in GIS and includes bikeway projects in the CIP	Has a partial, static inventory of missing facilities and opportunity areas through Bike, Pedestrian, or Active Transportation Plans	Does not have an inventory of missing/existing bikeways, parking, informal pathways, or key bicycle areas

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
3. Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas	Maintains and routinely updates an AI-based inventory of missing and existing sidewalks and crosswalks in GIS and includes sidewalk and crosswalk projects in the CIP	Maintains an inventory of missing sidewalks, crosswalks, informal pathways, or pedestrian opportunity areas	Does not have an inventory of missing sidewalks, crosswalks, informal pathways, or pedestrian opportunity areas
4. Inventory of Traffic Control Equipment (Signs, Markings, and Signals)	Maintains and updates an inventory of signs, markings, other countermeasures, and signals (including phasing) in GIS	Has some GIS-based inventories of signs, markings, other countermeasures, and signals	Does not have a GIS-based inventory of signs, markings, countermeasures, and signals
5. Crash History and Crash Reporting Practices	Employs a data-driven systemic safety or Vision Zero approach to regularly analyze crash data. Crash reporting is shared to key stakeholders in real-time and reporting details are consistent through the agency	Reviews data only following fatalities or other high-profile incidents	Does not have set practices for data review
6. Safety Action Plan	Has an LRSP that identifies routine data collection and assessment. Prioritized project list is updated based on crash data assessment	Completes crash data assessment on a project-by-project basis. Does not have an action plan that identifies regularity of assessment	Crash data assessment is ad-hoc and dependent on grant funded projects

4.3.1 Collection of Pedestrian and Bicyclist Volumes

Pedestrian and bicyclist volume data and a GIS database are important for understanding where people walk and bike. This establishes baseline data prior to project implementation and can help in prioritizing projects, developing crash rates, and determining appropriate bicycle and pedestrian infrastructure. The database helps to identify patterns and needs of underserved communities in local jurisdictions policies and programs.

Suggestion for Potential Improvement

- Routinely collect pedestrian and bicycle volumes by requiring them to be counted in conjunction with manual intersection turning movement counts.
- Metropolitan Transportation Commission: Traffic Data Collection in the San Francisco Bay Area (PDF)

- Geocode pedestrian volume data with GIS software along with other data such as pedestrian control devices and crashes to analyze data for trends or hotspots related to pedestrian safety.

4.3.2 Inventory of Bikeways, Parking, Informal Pathways, and Key Bicycle Opportunity Areas

A GIS-based inventory of bikeways, parking, informal pathways, and key bicycle opportunity areas enables project identification and prioritization, as well as project coordination with new development, roadway resurfacing, etc. This data set can be made available on a city's website for knowledge sharing with the public as well as agencies.

The city has existing and proposed bike facilities in GIS.

4.3.3 Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas

A GIS-based sidewalk inventory enables project identification and prioritization, as well as project coordination with new development, roadway resurfacing, etc. This data set can be made available on a city's website for knowledge sharing with the public as well as agencies.

The city has a GIS inventory of the sidewalks.

4.3.4 Inventory of Traffic Control Equipment (Signs, Markings, and Signals)

Cities and counties have a wide variety of traffic control devices that regulate how bicyclists and pedestrians should use the street and interact safely with drivers. However, some do not have inventories of how, when, and where these are installed. Creating a database of this information allows city staff to know where infrastructure may be out of date or in need of updates. For example, countdown signals are an important pedestrian safety countermeasure. The 2012 California *Manual of Uniform Traffic Control Devices* (MUTCD) requires the installation of countdown pedestrian signals for all new signals. The CA MUTCD also requires the installation of bike detection at all actuated signals. Bike detection is a basic building block of the bike network that makes sure that bikes can trigger traffic signals. Inventorying bike detection and countdown signals allows city staff to approach safety from a systems perspective and develop projects to close gaps in biking and walking infrastructure over time.

Suggestions for Potential Improvement

- Develop a comprehensive citywide crosswalk inventory in GIS and maintain it over time. This would allow for a systemic safety approach to enhancing crosswalks and allow the city to prioritize all crosswalk enhancement projects citywide for implementation over time and as money is available.
- Ensure that locations with pedestrian desire lines have safe crosswalks. An updated crosswalk policy can help determine the appropriate crossing treatment at uncontrolled locations without marked crosswalks.
- Include maintenance records within the GIS inventory of signs, markings and signals.
- Develop a proactive monitoring program to ensure the quality and proper functioning of traffic control devices.

4.3.5 Crash History and Crash Reporting Practices

Safety is typically approached through both proactive and reactive measures. Identifying and responding to crash patterns on a regular basis and in real-time is an important reactive approach to bicycle and pedestrian safety, which may be combined with other proactive measures. This is the traditional way most cities and counties have approached safety. However, many are now looking to proactive safety to address safety issues on a systemwide basis. This is often paired with a policy goal of getting to zero fatality or serious injury crashes (commonly referred to as "Vision Zero").

The city's Vision Zero Action Plan calls for using a data driven systemic safety approach.

Suggestions for Potential Improvement

- Advance the data driven systemic safety approach, which would include a systems approach to identifying, prioritizing, and ultimately implementing safety countermeasure and/or a formal commitment to Vision Zero.
- Additionally, with sufficient pedestrian volume data, the city could prioritize crash locations based on crash rates (i.e., crashes/daily pedestrian volume), a practice that results in a complete safety needs assessment. Treatments could then be identified for each location and programmatic funding allocated in the city's Capital Improvements Program (CIP).

4.3.6 Safety Action Plan

A Local Road Safety Plan (LRSP) or Caltrans-approved safety report identifies dedicated, annual funding streams for bicycle and pedestrian projects within underserved communities. Bicycle and pedestrian projects can also be integrated into the other work that the city does, including repaving and other routine roadway network maintenance.

Dedicated annual funding streams may include general city funds, local and regional impact fees, county tax measure funds, and local tax measure funds. Some grant opportunities include the Highway Safety Improvement Program (HSIP), Congestion Mitigation and Air Quality Improvement Program (CMAQ), Active Transportation Program (ATP), Safe Routes to School Grant (SRTS), TDA Article 3 (SB 821), and Safe Streets for All (SS4A).

Suggestions for Potential Improvement

- Partner with other agencies and continue applying for grant funding for both infrastructure and non-infrastructure projects.
- Integrate bicycle and pedestrian projects into the site plan review process for new development.
- Secure additional funding for repaving projects to allow for "quick build" projects and other bicycle and pedestrian safety improvements to be integrated into those projects.
- Establish a dedicated funding source for pedestrian and bicycle projects.

4.4. PEDESTRIAN AND BICYCLE NETWORK PLANNING AND DESIGN

Safe, comfortable, and connected pedestrian and bicycle networks allow people of all ages and abilities to navigate roads to get where they want to go. Key areas to consider in this category are safe road users and safe roads.

Table 4-3: Benchmarking Analysis for Pedestrian and Bicycle Network Planning and Design

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Complete Streets Policy	Has a Complete Streets policy that includes all users and modes, affects new construction and maintenance, considers local context, and provides guidance for implementation	Has a Complete Streets policy that is narrow in scope or applies only to public works projects	Does not have a Complete Streets policy
2. Active Transportation Plan	Has a recently updated Active Transportation Plan (or similar) with a strategic prioritized list of projects that reflects current best practices (e.g., Level of Traffic Stress analysis, inclusion of Class IV protected bicycle facilities)	Has a Pedestrian or Bicycle Master Plan, but it may be outdated, and/or no recent projects from the Plan have been completed	Does not have a Pedestrian or Bicycle Master Plan
3. Existing bike network	Existing bike network includes best practice low stress facilities such as protected bikeways, bike boulevards, and protected intersections citywide or countywide	Bike network primarily includes Class I, II, and III facilities. There are gaps within the bike network and facilities do not accommodate all users	Bike network is not regularly maintained, or routes are unclear to users
4. Existing pedestrian facilities	Existing pedestrian facilities includes low-stress facilities and frequent use of landscape strips, medians, frequent crosswalks, and roadways are primarily two-to-four lane roads	Narrow sidewalks or sidewalk gaps, crosswalks with few or no safety enhancements, crosswalks are minimal, and roadways are primarily arterials	Missing key marked crosswalks and sidewalks, with few ADA improvements and no safety enhancements, and no pedestrian countdown signals
5. Bike Network Implementation Practices	Age 8 to 80 bicyclist considerations are included in the agency's policies and level of traffic stress is considered. A Bike or Other Safety Plan identifies low-stress networks and funding mechanisms to implement a low-stress network city/countywide	Spot locations have been identified through safety plan(s) for a low-stress network. Plan also identifies additional proven countermeasures to be implemented as part of the project	Treatments are implemented where they fit within the right-of-way, and vehicle LOS is not affected

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
6. Pedestrian Network Implementation Practices	Pedestrian priority areas (PPA) are identified in a safety plan and the agency has policies prioritizing PPAs, crosswalk spacing, and design enhancements.	Spot PPA locations have been identified through safety plan(s). The plan also identifies additional proven countermeasures to be implemented as part of the project	Treatments are implemented on a project-by-project basis
7. Design guidelines and standards	Uses national best practices focused on bicycle and pedestrian safety for roadway and facility design guidelines and standards	Local standards reference national best practices, but are static or out of date, with minimal customized design policies for pedestrian and bicycle accommodations	Does not have comprehensive design guidelines or standards for pedestrian or bicyclist treatments
8. Attention to Bicycle Crossing Barriers	Separated bikeways and other innovative treatments, including geometric enhancements, are provided at intersections and interchanges	Higher-stress bike treatments are installed at some intersections and interchanges	Bike treatments are not installed at intersections or through interchanges
9. Attention to Pedestrian Crossing Barriers	Has a recently updated policy and comprehensive inventory of barriers. Has design guidelines and funding in place for addressing barriers	Has no policy, but has identified some barriers and taken steps to improve pedestrian access	Does not have a policy or practices for addressing barriers to walking
10. Intersection Control Evaluations	Uses intersection control evaluations to assess alternative traffic control (e.g., roundabout, signal, stop signs) performance (safety, ped/bike, etc.) and select appropriate control based on desired performance.	Uses relaxed warrants for traffic signals and/or all-way stops. If asked to by community or stakeholder may consider a roundabout or neighborhood traffic circle.	Uses MUTCD Warrants and/or does not have a practice of using Intersection Control Evaluations

4.4.1 Complete Streets Policy

Complete Streets Policies are formal statements showing a city's commitment to planning and designing for all modes of travel and travelers of all ages and abilities.

The city has a Complete Streets policy.

4.4.2 Active Transportation Plan

This type of plan includes a large menu of policy, program, and practice suggestions, as well as site-specific (and prototypical) engineering treatment suggestions. Bicycle and Pedestrian Master Plans document a jurisdiction's vision for improving walkability, bikeability, and bicycle and pedestrian safety; establish policies, programs, and practices; and outline the prioritization and budgeting process for project implementation.

The city does not have a current Bicycle/Pedestrian Master Plan but has a Transportation Master Plan that includes bicycles and pedestrians.

Suggestions for Potential Improvement

- Implement the low-hanging projects in the Bicycle and Pedestrian Master Plan and seek grant funding for major projects.
- Pursue additional funding opportunities for programs identified by the Plan.
- Provide regular updates to the Plan, including bicycle and pedestrian facilities and design guidelines that address the needs of bicyclists and pedestrians of all ages and abilities.
- Consider identifying existing and missing bicycle and pedestrian infrastructure for safety improvement.

4.4.3 Existing Bike Network

Innovative features such as protected bikeways, bike boulevards, and protected intersections citywide or countywide can decrease the level of traffic stress experienced by bicyclists, make biking more comfortable, and, in so doing, appeal to a wide range of bicyclists. Level of traffic stress refers to the level of comfort or discomfort a bicyclist might experience. Research conducted by the Mineta Institute in San Jose establishes levels of traffic stress on a scale of 1 to 4 with LTS 1 at the level that most children can tolerate and LTS 4 at the level characterized by "strong and fearless" cyclists (see: http://transweb.sjsu.edu/project/1005.html). A bicycle network that is attractive to the majority of the population would have low stress and high connectivity.

Suggestions for Potential Improvement

- Continue to identify funding sources and implement the proposed projects identified in the Transportation Master Plan.
- Develop design standards for bike boulevards, trails, paths, and landscaping for bicycle networks.
- Create a GIS data for the existing bike network to identify gaps and opportunities for improvements.

4.4.4 Existing Pedestrian Facilities

Installation of pedestrian facilities that include low- stress facilities and frequent use of landscape strips, medians, and frequent crosswalks are best practices. Narrow sidewalks or sidewalk gaps, crosswalks with few or no safety enhancements, and minimal number of crosswalks discourage people from walking as a means of transportation.

Suggestions for Potential Improvement

- Continue to identify funding sources and implement the proposed projects identified in the Transportation Master Plan.
- Create a GIS database for existing pedestrian infrastructure to identify gaps, inventory assets, and create opportunities for systemic safety analysis of all crosswalks.

4.4.5 Bike Network Implementation Practices

Considering the safety and comfort of people biking leads to better projects that can encourage new biking trips and enhance safety for active transportation users today and in the future. Bicycle Level of Traffic Stress (LTS) was originally developed by researchers at the Mineta Transportation Institute. LTS assesses the comfort and connectivity of bicycle networks.

Suggestions for Potential Improvement

- Prioritize bicycle projects to align with roadway resurfacing and projects that are near school sites.
- Secure enough funding for repaving and other complete streets projects to allow for installation of protected bike and pedestrian facilities and intersection improvements.
- Prioritize Use Level of Traffic Stress (LTS) to strategically implement bikeways and traffic calming treatments that would improve LTS of existing bikeways.

4.4.6 Pedestrian Network Implementation Practices

Considering the safety and comfort of people walking leads to better projects that can encourage new walking trips and enhance safety for active transportation users today and in the future.

Suggestions for Potential Improvement

- Prioritize pedestrian projects to align with roadway resurfacing and projects that are near school sites.
- Identify pedestrian priority areas and have a policy in place for crosswalk spacing and design enhancements
- Secure enough funding for repaving and other complete streets projects to allow for installation of protected bike and pedestrian facilities and intersection improvements.

4.4.7 Design Guidelines and Standards

Design guidelines and development standards create a clear set of documents that guide how all transportation improvements should be installed citywide. As a result, they can create a consistent, high-quality biking and walking experience.

Suggestions for Potential Improvement

Consider adopting national bicycle and pedestrian safety best practices for roadway and facility design guidelines and standards:

- NACTO Urban Street Design Guide (PDF)

- CROW Design Manual for Bicycle Traffic
- FHWA Separated Bike Lane Planning and Design Guide (PDF)
- MassDOT Separated Bike Lane Planning & Design Guide
- ITE Recommended Practice for Accommodating Pedestrians and Bicyclists at Interchanges
- AASHTO Guide for the Development of Bicycle Facilities (PDF)
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (PDF)

4.4.8 Attention to Bicycle Crossing Barriers

Crossing barriers — such as railroads, freeways, and major arterials — may discourage or even prohibit bicycle access and are often associated with vehicle-bicycle crashes. Large intersections and interchanges and uncontrolled crossings can often deter bicyclists due to high speeds, high number of conflict points with vehicles, and high level of exposure. Identifying and removing barriers and preventing new barriers is essential for improving bicyclist safety and access.

Suggestions for Potential Improvement

- Use green routinely to highlight conflict zones at large intersections and interchanges.
- To slow speeds at critical intersections, use smaller corner radii utilizing small design vehicles appropriate for urban areas and updated standard plans to reflect this.
- Review design of slip/trap-right lanes at intersections and implement improvements.
- Implement best practice guidance on bicycle accommodation through interchanges and expressways, as appropriate, using the ITE's Recommended Practice: Guidelines to Accommodate Bicyclist and Pedestrians at Interchanges plus consideration of protected bike lane design.
- Consider pedestrian barriers and needs when conducting bicycle barriers assessment.

4.4.9 Attention to Pedestrian Crossing Barriers

Similar to bicyclist crossing deterrence, crossing barriers may also discourage or even prohibit pedestrian access and can create safety challenges for pedestrians. These can be similar to the biking barriers or present additional challenges.

Suggestions for Potential Improvement

- To slow speeds at critical intersections, use smaller corner radii utilizing small design vehicles appropriate for urban areas and updated standard plans to reflect this.
- Review design of slip/trap-right lanes at intersections and implement improvements.
- Identify and create an inventory of pedestrian barriers with targeted recommendations for phased improvements.
- Consider pedestrian barriers and needs in conducting bicycle barriers assessment.

4.4.10 Intersection Control Evaluations

Providing alternative traffic controls such as roundabouts, signals, and stop signs may improve pedestrian and bicycle safety by reducing speeds and controlling vehicle conflicts. Installing bicycling signals and limiting stop signs on bicycle routes may enhance bicycle mobility and safety. The CA MUTCD defines warrants for installing signals and stop signs.

Suggestion for Potential Improvement

Develop specific signal and stop sign warrants that are pedestrian- and bicycle-friendly.

4.5. PEDESTRIAN AND BICYCLE SUPPORT PROGRAM

Pedestrian and bicycle support programs are critical for improving safety for people walking and biking. Key areas to consider in this category are safe road users, safe speeds, and post-crash care.

Table 4-4: **Benchmarking Analysis for Safety Data Collection and Assessment**

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Pedestrian and Bicycle Safety Education Program	Pedestrian and bicycle education programs are data-driven and focused on local safety context; education programs are customized for different groups. The program includes education for drivers/motorists.	Has some traffic safety education programs that address pedestrians and bicyclists	Does not have pedestrian and bicycle safety education programs
2. Enforcement	Police Department applies for annual OTS funding, and conducts sustained, and data-driven enforcement efforts focused on education, behavior, and locations related to most severe bicycle and pedestrian crashes; enforcement is effective is KSI crashes decrease and there is lower racial disproportionality in traffic citations	Police Department conducts some data-driven enforcement activities related to bicyclist and pedestrian safety	Enforcement is not data-driven, or Police Department does not have Traffic Safety Officer(s)
3. Pedestrian Walking Audit Program	Has significant and ongoing programs that include regular walking audits	Has no safety program, but has conducted walking audits sporadically	Does not have a pedestrian safety program and has not conducted a walking audit
4. Bicycling Safety Audit Program	Has significant and ongoing programs which include bicycling audits	Has no safety program, but has conducted biking audits	Does not have bicycling safety audit programs
5. Vehicle Miles Traveled (VMT) Mitigation Strategies	Has a VMT Mitigation Strategy that uses the most recent guidance from CAPCOA to measure potential impacts of pedestrian and bicycle facilities	Mitigation measures identified in CAPCOA are used independently on a project-by-project basis	Does not use CAPCOA mitigation strategies

Benchmarking Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
6. Coordination with Emergency Response	Emergency response is involved in all aspects of bicycle/pedestrian facility planning and design (including pilot testing), and they balance response times with bicyclist/pedestrian safety. Agency also works with emergency response to implement policies providing information on traffic incident management	Emergency response is involved in some aspects of bicycle/pedestrian facility planning and design	Emergency response is not involved in bicycle/pedestrian facility planning and design
7. Coordination with Health Agencies	Coordinates regularly with health agencies in the planning of bicycle and pedestrian facilities and/or programs and collection of crash data	Health agencies have programs to promote healthy lifestyles through active transportation	Health agencies are not involved in bicycle/pedestrian safety or active transportation
8. Coordination with Transit Agencies	Bicycles are accommodated on all transit vehicles with overflow capacity available. The agency partners with transit providers to ensure safe and comfortable routes for biking and walking to transit stops and stations, including on roadways with both frequent bus service and bicycle facilities	Bicycles are accommodated on buses only, with accommodation limited to rack capacity. Some transit stops and stations safe and comfortable routes for biking and walking access	Bicycles are not accommodated on transit. There are few bicycle and pedestrian accommodations for accessing transit stops and stations

4.5.1 Pedestrian and Bicycle Safety Education Program

Engineering treatments are often not enough on their own to realize full safety benefits associated with the treatment. Safety education programs complement engineering treatments and increase compliance. Education campaigns target drivers and people of all ages, especially school-age children where safe walking and biking habits may be instilled as lifelong lessons.

Suggestion for Potential Improvement

- Conduct a formal education campaign about street safety targeting drivers, pedestrians, and bicyclists. This includes advertisements on buses and bus shelters, an in-school curriculum, community school courses, public service announcements, and a range of other strategies. Consider a focus on speed and safe driving.

4.5.2 Enforcement

Enforcement of pedestrian and bicycle right-of-way laws and speed limits is an important complement to engineering treatments and education programs.

The city's Police Department has conducted enforcement for pedestrian safety, and they have Community Service Officers.

Suggestions for Potential Improvement

- Implement sustained pedestrian safety enforcement efforts and involve the media. Use enforcement as an opportunity for education by distributing pedestrian safety pamphlets in lieu of, or in addition to, citations.
- Train officers in pedestrian safety enforcement principles.
- Establish a radar gun check-out program for trained community volunteers to record speeding vehicles' license plate numbers and send letters and/or document occurrences.

4.5.3 Pedestrian Walking Audit Program

Walking audits provide an interactive opportunity to solicit feedback from key stakeholders about the study area and to discuss the feasibility of potential solutions. The audits can be led by city staff, advocacy groups, neighborhood groups, or consultants.

Suggestion for Potential Improvement

- Include regular walking audits in citywide pedestrian safety programs, based on the suggestions of this CSSA. This effort may complement other "green" or health-oriented programs within the city.

4.5.4 Bicycling Safety Audit Program

Consensus is more readily reached on a vision and action plan for safety enhancements when city staff and key stakeholders ride along study corridors and experience key route and crossing challenges and best practices.

Suggestions for Potential Improvement

- Include regular bicycling audits in the citywide bicycle safety programs. Encourage interdepartmental participation.
- Routinely conduct bicycle safety audits of key corridors throughout the city, including those with recent improvements, those with heavy bicycle demand, and those with high crash rates.
- Collaborate with schools on projects beyond the school district boundaries.

4.5.5 Vehicle Miles Traveled (VMT) Mitigation Strategies

A VMT mitigation strategy should use the most recent guidance from California Air Pollution Control Officers Association (CAPCOA) to measure potential impacts of pedestrian and bicycle facilities.

Suggestion for Potential Improvement

- CAPCOA Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (PDF)

4.5.6 Coordination with Emergency Response

Emergency response requires special roadway design considerations that sometimes conflict with bicycle and pedestrian treatments. One example is the design of turning radii at intersections. Bicyclists and pedestrians benefit from the reduced vehicle speeds of smaller radii, but larger vehicles, such as fire trucks, have more difficulty performing the turn within the smaller space. These conflicts require consensus building between the city and the respective departments. Consensus building could include pilot testing of alternative treatments, such as a model traffic circle in an open field.

Suggestions for Potential Improvement

- Include the Fire Department early in the process as a stakeholder.
- Balance the trade-off between traffic calming safety treatments such as roundabouts or partial street closures and longer emergency response times.
- Encourage emergency and transit responders to participate in test runs of roadway designs that are aimed at reducing speed and improving bicycling access.
- Implement policies providing information on tragic incident management.

4.5.7 Coordination with Health Agencies

Involving non-traditional partners such as public health agencies, pediatricians and others in the planning or design of pedestrian and bicycle facilities may create opportunities to be more proactive about pedestrian and bicycle safety, identify pedestrian and bicycle safety challenges and education venues, and secure funding. Additionally, underreporting of pedestrian-vehicle and bicycle-vehicle crashes could be a problem that may be partially mitigated by involving the medical community in pedestrian and bicycle safety planning.[27]

Suggestion for Potential Improvement

Continue coordinating with the health agencies in your community.

[27] Sciortino, S., Vassar, M., Radetsky, M. and M. Knudson, "San Francisco Pedestrian Injury Surveillance: Mapping, Underreporting, and Injury Severity in Police and Hospital Records," *Accident Analysis and Prevention*, Volume 37, Issue 6, November 2005, Pages 1102-1113

4.5.8 Coordination with Transit Agencies

Providing safe and comfortable biking and walking routes to transit stops and stations, and the ability to take bicycles on-board transit vehicles increases the likelihood of multi-modal trips.

The city's shuttles can accommodate bikes.

Suggestion for Potential Improvement

Work with transit agencies, Caltrans, and other relevant partners to improve access and safety to stations and bus stops.

4.6. ADDITIONAL AREAS TO CONSIDER FOR SAFETY IMPROVEMENTS

The following topics were not included in the 2024 benchmarking survey. However, they remain important strategies to consider in improving safety for people walking and biking.

4.6.1 Surrogate Safety Measures for Proactive Monitoring

Innovative data collection techniques such as hard braking, speed, and near miss data can provide additional insights into crashes. Community feedback tools such as Street Story can assist local jurisdictions to collect data. Street Story: A Platform for Community Engagement.

4.6.2 Roadway Surfaces for Bicycle Facilities

The quality of a roadway surface along bikeways is an important consideration when choosing to bike. Rough surface in a bike lane creates an uncomfortable bicycling experience and may also pose safety hazards.

Suggestions for Potential Improvement

- Prioritize maintenance of roadways where bicycle facilities are present, particularly for closing gaps in the bikeway network or where improved pavement quality is needed on popular bicycle routes.
- Prioritize debris removal on roadways where bicycle facilities are present.
- Assess the need for new and enhanced crosswalks and curb ramps with each repaving project. Include consideration of lane reductions and quick build projects such as paint and plastic median refuges and bulb outs, high-visibility crosswalks, and advanced yield markings.

4.6.3 Sidewalk Furniture or Other Sidewalk Zone Policies

Street furniture encourages walking by accommodating pedestrians via benches to rest on along the route or wait for transit; trash receptacles to maintain a clean environment; street trees for shade, etc. Uniform street furniture requirements also enhance the design of the pedestrian realm and may improve economic vitality.

Suggestion for Potential Improvement

- Adopt a Street Furniture Ordinance to include locations and furniture amenities other than those associated with transit stops, as appropriate.

4.6.4 Street Tree Requirements

Street trees enhance the pedestrian environment by providing shade and a buffer from vehicles, which increase pedestrian safety. Street trees may also enhance property values, especially in residential neighborhoods. However, street trees, when improperly selected, planted, or maintained, may cause damage to adjacent public utilities.

The city is working on developing a Tree Master Plan.

Suggestion for Potential Improvement

- The new Tree Master Plan needs to provide guidance on permissible tree types and permitting requirements, also specifying a requirement for new tree plantings associated with development projects.

4.6.5 Bicycling Supportive Amenities and Wayfinding

In addition to designating roadway or paths in a bicycle network, supportive amenities (including parking, water fountains, and maintenance stations) can encourage bicycling. Wayfinding can both encourage bicycling and enhance safety by guiding cyclists to facilities that have been enhanced for bicyclist use or to local retail opportunities for economic growth.

The city has bicycle wayfinding signs.

Suggestions for Potential Improvement

- Develop a Biking Guide that includes a bike map and bicycle locker and rack locations.

4.6.6 Bicycle Parking Requirements

Safe and convenient bicycle parking is essential for encouraging bicycle travel (especially in lieu of vehicle travel). Bicycle parking can also facilitate last-mile connections between two modes, such as bicycle parking at a transit station. To be effective, bicycle parking needs to be visible and secure and have enough capacity to accommodate bicycle demand, both long term and short term, which can be implemented through a bicycle parking ordinance.

Suggestions for Potential Improvement

- Implement short-term and long-term, secure bicycle parking at all new development, consistent with the *APBP Bicycle Parking Guidelines, 2nd edition*.
- Locate bicycle racks to be convenient for bicyclists, out of the way of pedestrians, and with good visibility for security, consistent with the *APBP Bicycle Parking Guidelines, 2nd edition.*
- Consider implementation of “branded” racks for the city (with a unique design or the city's symbol).

4.6.7 General Plan: Provision for Pedestrian and Bicycle Nodes

Planning principles contained in a city's General Plan can provide an important policy context for developing pedestrian-oriented, walkable areas. Transit-oriented development, higher densities, and mixed uses are important planning tools for pedestrian-oriented areas. The General Plan

identifies pedestrian priority areas, which are zones in which high volumes of pedestrian traffic are encouraged and accommodated along the sidewalk.

Suggestions for Potential Improvement

- Create an overlay district for pedestrian priority areas with special pedestrian-oriented guidelines, such as relaxing auto Level of Service standards and prioritizing pedestrian improvements. Prioritize sidewalk improvement and completion projects in these nodes.
- Utilize vehicle miles traveled (VMT) for future transportation impact analysis.

4.6.8 General Plan: Safety Element

SB 99 and AB 747 involve safety evacuation during natural disasters. Local jurisdictions should identify creative solutions on how to evacuate residents safely and efficiently while maintaining and implementing low-stress pedestrian and bicycle facilities.

On safety evacuation routes, agencies should identify creative solutions for evacuating residents safely and efficiently while maintaining and implementing low-stress pedestrian and bicycle facilities.

4.6.9 General Plan: Densities and Mixed-Use Zones

Planning principles contained in a city's General Plan can provide an important policy context for developing bicycle-oriented and walkable areas. Transit-oriented development, higher densities, and mixed uses are important planning tools for pedestrian-oriented areas.

Suggestion for Potential Improvement

- Use vehicle miles traveled (VMT) for future transportation impact analysis.
- Consider allowing moderate to high densities in the downtown and mixed-use zones as well as progressive parking policies, such as shared parking and demand-based pricing.
- Consider multi-modal trade-offs in the transportation impact analysis for new development, so that the safety and needs of people walking and biking are weighed heavily, and vehicular delay is not the primary performance measure.
- Ensure that wide sidewalks, high quality, protected bike lanes, and intersection safety improvements are included in all new development projects, particularly where densities are higher.
- Strongly weigh walking and biking performance measures as well as safety metrics in determining appropriate intersection improvements and street design.

4.6.10 Specific Plans, Overlay Zones, and Other Area Plans

When specific plans, overlay zones, or any other area plans are being developed, the city/county can specifically request the bicyclist and pedestrian-oriented design, walkability, or placemaking be stressed in these plans.

Suggestions for Potential Improvement

- Emphasize bicyclist and pedestrian-oriented design, walkability, and/or placemaking in all new specific plans, overlay zones, and other area plans.

4.6.11 Historic Sites

Historic walking routes or bike trails, such as the famous Freedom Trail in Boston, encourage active transportation and enhance economic vitality.

Suggestions for Potential Improvement

- Continue to implement the goals, policies and programs that support walking trips included in the Historic Preservation and Community Design Element of the General Plan to showcase natural or local sites of interest, and link key features of the city. Maps of the tour route and historic documentation materials could be made available online or as a mobile app in addition to wayfinding signs, maps, and plaques throughout the city. Consider other areas of the city for walking tours and historic signs.
- Consider installing History Walk signs with large text for legibility and wayfinding.

4.6.12 Economic Vitality

Improving bicycle and pedestrian safety and walkability can enhance economic vitality. Similarly, enhancing economic vitality through innovative funding options such as Business Improvement Districts (BIDs), parking management, and facade improvement programs can lead to more active areas and encourage walking and bicycling.

Suggestions for Potential Improvement

- Activate the built environment in business areas through BIDs and façade improvement programs.
- Use wayfinding, walking routes, and events to direct pedestrians to commercial areas throughout the area.
- Install bicycle parking in commercial areas and provide safe, comfortable bike facilities in commercial areas to make it convenient and fun to get to local businesses.

4.6.13 Post-Crash Care

An agency's adopted LRSP or Caltrans-approved Safety Plan should include resources for the agency to implement identified countermeasures for medical rehabilitation, on-going advocacy group engagement, and resources for the adjudication process to ensure offenders receive proper sentencing and treatment.

Suggestions for Potential Improvement

Consider reviewing your agency's LRSP and add resources for implementing identified countermeasures for medical rehabilitation, on-going advocacy group engagement, and resources for the adjudication process to ensure offenders receive proper sentencing and treatment.

4.6.14 Proactive Approach to Institutional Coordination

Institutional coordination associated with multiple agencies and advocacy groups is a critical part of the work of any municipality. Non-local control of right-of-way and differing policies regarding pedestrian and bicyclist accommodation can make the work complex.

Suggestions for Potential Improvement

- Work with local school districts to establish a policy on neighborhood-sized and oriented schools as part of a Safe Routes to School policy.
- Work with the school districts to establish suggested walking routes and address potential barriers to pedestrian or bicycle access.

5. COMPLETE STREETS FIELD AUDIT RESULTS & SAFETY RECOMMENDATIONS

5.1. OVERVIEW

Complete Streets audits are typically conducted as an initial step to improve the street environment for all travel modes within the selected area. Many individuals can participate, including residents, stakeholders, and affiliated individuals. During the audits, positive practices are observed, and issues and opportunity areas are noted. Observations are made of the interactions among motorists, pedestrians, and bicyclists. Observations are based on the behavior of these different road users, particularly at intersections. For each opportunity area, the group discusses possible suggestions to address safety and operational concerns. Complete Streets audits are highly interactive, with many observations noted in the field. The audits are a means to observing and learning how to "see through the eyes of pedestrians and bicyclists."

This chapter presents observations and suggestions made during the kickoff meeting and field audit conducted on Wednesday, April 24, 2024.

Suggestions in this chapter are based on best practices and discussions with the participants regarding local needs and feasibility. It may be noted that these suggestions are based on limited field observations and time spent in the City of Menlo Park by the CSSA evaluators. These suggestions are intended to guide city staff in making decisions for future safety improvement projects in the city — they may not incorporate all factors relevant to pedestrian and bicycling safety issues in the city. This report is conceptual in nature, and conditions may exist in the focus areas that were not observed and may not be compatible with the suggestions presented below. Before finalizing and implementing any physical changes, city staff may choose to conduct more detailed studies or further analysis to refine or discard the suggestions in this report if they are found to be contextually inappropriate or appear not to improve bicycling or pedestrian safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume or speeds, physical limitations on space or sight distance, or other potential safety concerns.

5.2. BACKGROUND

City of Menlo Park staff requested that the field audit examine the entire Santa Cruz Avenue corridor, but focused on the six intersections between University Drive and Orange Avenue. In addition, the project scope included a field audit of Sand Hill Road between Sharon Park Drive and Oak Avenue, in addition to Santa Cruz Avenue between Sand Hill Road and Junipero Sierra Boulevard.

Section 5.3 presents key issues and suggestions identified during the audit that can be applied citywide. Subsequent sections address each focus area, and each concludes with a tabular and graphical summary of suggestions for that area.

5.3. GENERAL CITYWIDE SUGGESTIONS

The following general suggestions for physical enhancements are appropriate citywide improvements to enhance pedestrian and bicycle safety. These are discussed in detail below.

Table 5-1a: General Safety Toolbox (Pedestrian)

Pedestrian	Details
Left-side signs on medians	At uncontrolled locations where it is feasible to add a raised median to protect a sign, do this so that each approach sees a pair of warning signs on its side of the street.
Left-side warning signs: symbol orientation	Pedestrian symbol (W11-2) or trail crossing signs (W11-15) installed on the left side of street may depict users approaching, just as the W16-7p Downward Pointing Arrow always points into the approach. (MUTCD 2A.06 Design of Signs specifically allows mirror images. However, sign catalogs may not designate a unique product code.)
Upstream sightlines	Prohibit parking for at least 1 car length upstream of crosswalk, to keep sightlines open to approaching traffic. A curb extension can ensure compliance and is a good place for crosswalk warning signs. “Bike corrals” (in-street racks) can also utilize this area. Assembly Bill 413 would prohibit the stopping, standing, or parking of a vehicle within 20 feet of the vehicle approach side of any unmarked or marked crosswalk or 15 feet of any crosswalk where a curb extension is present.
Advance Limit Lines	Install 6 feet in advance of controlled crosswalks, to deter motorists from encroaching.
Yield Lines	Install on multi-lane approaches to uncontrolled crosswalks, 20 to 50 feet before the crosswalk.
Curb extensions	Enable pedestrians to make a starting decision where they can see and be seen. Calm inbound right turns by reducing the physical radius. Shorten crosswalks.
Interim curb extensions	Consider Painted Safety Zone / Interim Curb Extension treatments at locations where the need is current, but hardscape curb extensions are subject to future funding.
Crosswalk markings	At uncontrolled crosswalks, incorporate wide longitudinal elements (e.g., “ladder rungs”) for long-distance visibility by approaching drivers.
Center islands on side streets	Calm inbound turns. May enable bicyclists preparing to turn left or proceed through to wait further forward than they otherwise would.
Directional curb ramps	Provide two ramps per corner, aligned with sidewalks, rather than diagonal ramps.
Accessibility	Ensure that signal actuation is ADA compliant.
Leading Ped. Interval	Display WALK phase (typically) five seconds before same-direction green indication, so pedestrians can occupy the curb lane.
Centerline	Install no-passing (double yellow) centerline 50 feet back from crosswalk.

Table 5-1b: General Safety Toolbox (Bicycle)

Bicycle	Details
Detection	Install bicycle and motorcycle detection at through, left turn, and bicycle lanes at all actuated approaches.
Right turn lanes	Where total width is insufficient for marking an adjacent bike lane, install sharrows left- aligned in the lane and add a R118(CA) “Except Bicycles” plaque to right-turn only signs.
Wayfinding	Install bicycle guide signage to destinations served by bike routes, with the name of the destination, the direction, and optionally the distance.

Advance Limit Lines

At approaches to controlled crosswalks (i.e., at signals or STOP signs), installing an advance limit line a short distance (typically four feet) before the crosswalk can remind motorists to stop far enough back that their vehicle’s front end does not encroach into the crosswalk. Such encroachment can be a safety issue at multi-lane approaches when the front end of a vehicle waiting hides a low pedestrian (child or wheelchair user) approaching across another lane.

Corner Curb Extensions

At intersections with conventional corners and no curb extensions, pedestrians preparing to cross a street typically make their crossing decisions before stepping off the curb, i.e., while on the sidewalk. Due to substantial corner radii at most intersections, this places them over 10 feet outside of the first travel lane they will enter. Corner curb extensions (bulb-outs) enable pedestrians to safely make their decision near the outside travel lane, where they are more visible to approaching motorists and have a considerably shorter distance to cross. Raised curb extensions also enable crosswalk warning sign assemblies to be installed closer to the travel lanes where they are more visible to motorists. One resource for curb extensions is NACTO’s Urban Street Design Guide section:

https://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/

Curb extensions attached to the street’s existing curb can be expensive to construct because they may preserve drainage along the street and provide accessible slopes and curb ramps. However, the same safety benefits can be obtained at a lower cost and without modifying drainage if the extension area is segmented into “floating” islands between which pedestrians, including wheelchair users, travel at existing street grade.

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(Temporary Traffic Calming Curbs, Calgary, AB)

Figure 5-1: Segmented Floating Corner Island Treatment

Interim curb extensions

Many cities now deploy treatments consisting only of painted lines, colored paint or epoxy fill, and tubular delineators to rapidly and inexpensively create corner-bulb installations in advance of funding availability for hardscape versions. These go by various names such as “Painted Safety Zones” (San Francisco), “Painted Curb Extensions” (Pasadena), “Painted Bulbouts” (Denver) and “Interim curb bulbs” (Seattle).

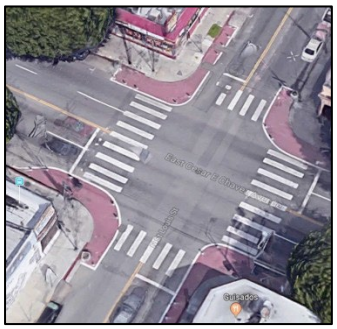
San Francisco MTA writes:

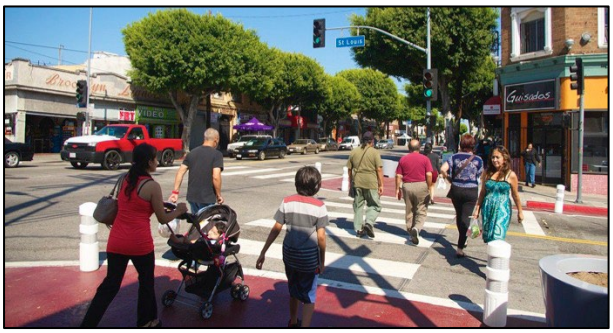
> *Painted safety zones are painted road areas that wrap around sidewalk corners to make pedestrian crossing intersections more visible to people driving. Painted safety zones are often flanked by delineators (white posts) and encourage people who drive to slow down, especially when making turns.*
>
> https://www.sfmta.com/getting-around/walk/pedestrian-toolkit

Seattle DOT (SDOT) writes:

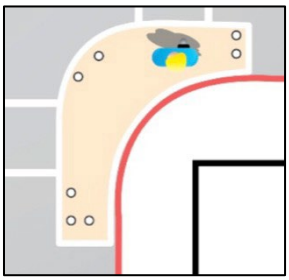
> *Interim curb bulbs may be appropriate in locations where there is a safety need and a permanent solution is not feasible in the short term, and/or where there is a planned capital improvement within 5 years. At intersections with curb and gutter, an interim curb bulb can only be done [where] there are existing curb ramps. In some cases, curb bulbs may also be integrated with bioretention to manage storm water runoff from the right-of-way.*

https://streetsillustrated.seattle.gov/urban-design/adaptive-design/intersection- treatments/





Los Angeles (Cesar Chavez & St Louis)



Pasadena Street Design Guide



Los Angeles – Pico & Curson





San Francisco (16th St & Kansas St)

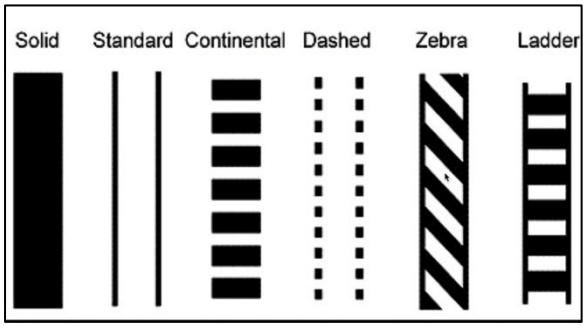
Figure 5-2: Paint and Delineator Curb Extensions

Crosswalk Marking Patterns – High Visibility and Contrast Edge

The standard crosswalk marking scheme at controlled approaches has two transverse lines and no fill pattern. Many cities use the standard pattern at controlled approaches and a high-visibility pattern at uncontrolled approaches. The following description from San Francisco MTA's crosswalk design guidelines describes the safety advantages of high-visibility markings:

> *Because of the low approach angle at which drivers view pavement markings, the use of longitudinal stripes in addition to or in place of the standard transverse markings can significantly increase the visibility of a crosswalk to oncoming traffic. While research has not shown a direct link between increased crosswalk visibility and increased pedestrian safety, high-visibility crosswalks have been shown to increase motorist yielding and*

channelization of pedestrians, leading the Federal Highway Administration (FHWA) to conclude that high-visibility pedestrian crosswalks have a positive effect on pedestrian and driver behavior.



(Figure 12 from FHWA report HRT-04-100, "Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations Final Report and Recommended Guidelines")

Figure 5-3: Crosswalk Marking Patterns (FHWA)

Table 5-2 suggested treatments for several crosswalk elements.

Table 5-2: Suggested Crosswalk Treatments

Elements	Approach	Controlled		Uncontrolled	
	Median	None or painted	Raised	None or painted	Raised
Crosswalk markings		2-line		High visibility (ladder)	
Warning signs at crosswalk		None		Curbside, 2-sided ("2-sign")	Curbside: 1-sided Median: 2-sided ("4-sign")
RRFBs on crosswalk signs		None		If needed	
Advance markings & signs		Advance limit line 4' upstream		Yield line 20'-50' upstream R1-5 Yield Here signs at yield lines	
Advance warning signs		None		If needed, per MUTCD	

Low-vision pedestrians (persons who are not completely blind) benefit from a continuous "contrast edge" for guidance when crossing streets. The solid transverse lines in the "solid," "standard," "zebra" and "ladder" patterns provide this, while the "continental" and "dashed" patterns do not. For all crosswalks at uncontrolled approaches that currently use the continental pattern, it is suggested to add two solid transverse lines to create a ladder pattern.

In prior decades, "artistic" crosswalks were constructed in which the transverse border was a wide cast concrete strip with no retroreflective white marking (12-inch line). Over time the contrast

between these strips and the middle of the crosswalk is reduced so the strips no longer provide an effective contrast edge for low-vision pedestrians. Twelve-inch transverse lines (white for non-school crosswalks, yellow for school crosswalks) may always be incorporated.

Leading Pedestrian Interval

Leading Pedestrian Interval (LPI) traffic signal phasing displays the pedestrian signal's WALK indication for three to seven seconds before the green indication for same-direction traffic. LPI gives pedestrians a head start to occupy the crosswalk before turning vehicles can enter the intersection. A 2000 study by the Insurance Institute for Highway Safety (IIHS) found that LPI reduces conflicts between turning vehicles and pedestrians.[28]

It is suggested that the city consider implementing LPI at signals with high pedestrian activity, prohibiting right-turn-on-red as needed per recent research findings. This discussion may be initiated with Caltrans for the signalized intersections along Main Street.

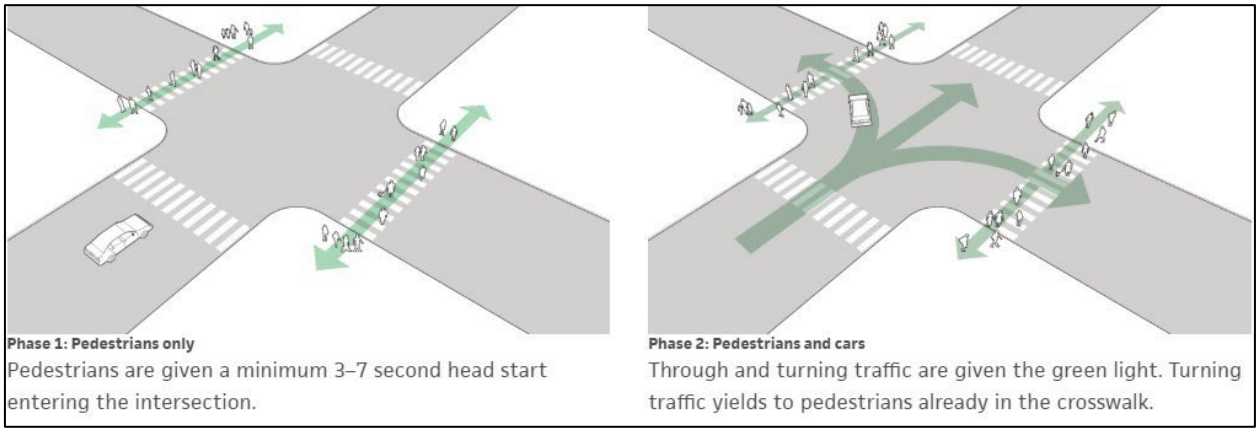


Figure 5-4: Leading Pedestrian Interval Phases

Center Islands on Side Streets

Adding pill-shaped center islands just behind the crosswalks side streets at some intersections can improve safety in several ways:

- Calm right turns from the major street
- Calm left turns onto the major street
- Calm through movements on the side street
- Provide a modest refuge for pedestrians crossing the side street, especially slow ones
- Enable the limit lines to be moved forward for better sightlines
- Provide a sheltered place for bicycle users approaching on the side street to prepare to cross or enter the major street

[28] *Field Evaluation of a Leading Pedestrian Interval Signal Phase at Three Urban Intersections*. Van Houten, Retting, Farmer, Van Houten. Transportation Research Record (TRR) 2000.

Figure 5-5 shows such an island on a 40-foot residential street in Sunnyvale, California (Canary Drive, at Inverness Way). The island is 6 feet wide and 20 feet long.



Figure 5-5: Median Island on Residential Street

Bicycle guide signage

The city of Menlo Park's low-stress bicycle route network can be enhanced with state-of-the-practice MUTCD-compliant bikeway network guide signage, as shown in Figure 5-6. The example shows "BIKE ROUTE" signs customized with the City of Oakland's "Oak Tree" logo in one corner. Custom (non-MUTCD) city-identity plaques can also be added atop the "BIKE ROUTE" sign, either citywide or on high-profile routes.

Decision point signs are installed in advance of a street or path intersection where travelers may want to change course to continue their current route or follow a different route.

Confirmation signs are installed after the decision-point intersection to reassure users that they made the correct choice.

Turn point signs are used as needed wherever the route does not continue straight. The destination plaques below the "BIKE ROUTE" signs can have arrows and optional distances as appropriate.

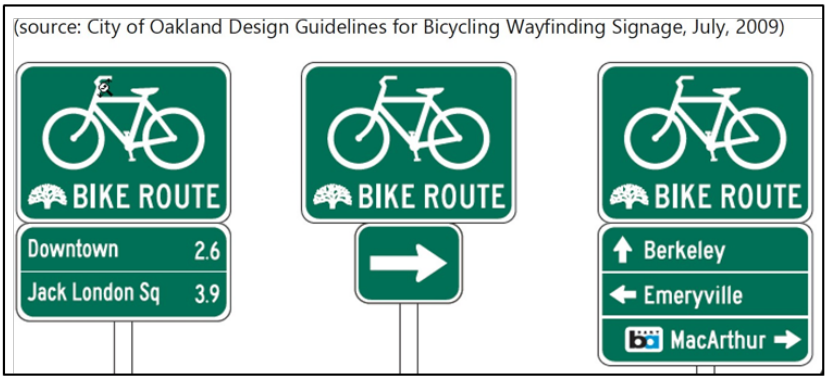


Figure 5-6: Bicycle Guide Signs

5.4. FOCUS AREAS

The following section addresses the focus areas of this study, which includes the Santa Cruz Avenue corridor and the Sand Hill Road corridor.

The first section will analyze the Santa Cruz Avenue corridor between University Drive and Orange Avenue, specifically focusing on the following intersections along the corridor:

1. Santa Cruz Avenue and University Drive
2. Santa Cruz Avenue and Johnson Street
3. St. Raymond Catholic Elementary School Driveway
4. Santa Cruz Avenue and San Mateo Drive
5. Santa Cruz Avenue and Olive Street
6. Santa Cruz Avenue and Orange Avenue

The second section will analyze the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive, including Santa Cruz Avenue between Sand Hill Road and Junipero Serra Boulevard, specifically focusing on the following intersections along the corridor:

7. Sand Hill Road and Oak Avenue
8. Sand Hill Road and Santa Cruz Avenue
9. Sand Hill Road and Sharon Park Drive
10. Alpine Road and Junipero Serra Boulevard

All the above study intersections are owned and operated by the city, except for the intersection of Sand Hill Road and Santa Cruz Avenue, which is shared between the city and San Mateo County.

Santa Cruz Avenue Corridor Between University Drive and Orange Avenue

The city intends to improve traffic safety by making it more comfortable for pedestrians and bicycle users to travel along and across Santa Cruz Avenue. Santa Cruz Avenue includes numerous side street stop-controlled intersections, which are challenging for pedestrians to cross safely. Some of the intersections on Santa Cruz Avenue are high priority locations identified in the Vision Zero Action Plan.



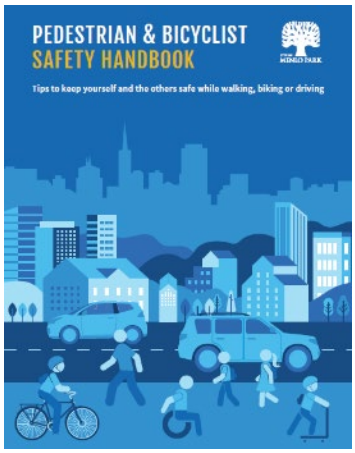
Santa Cruz Avenue is the access corridor for Hillview Middle School, and a significant number of students ride bicycles or walk to school via Santa Cruz Avenue, which serves as a main route for school children. The community has expressed a strong desire to improve active transportation safety for school children, in particular bicyclists and e-bicyclists who frequently use this segment before and after school. Vehicular speeds are also high on Santa Cruz Avenue and the 85th percentile speed is between 30 and 35 miles per hour.

Santa Cruz Avenue is a two-lane minor arterial street serving as one of the city's primary east-west connections. The study area falls west of the city's downtown area between University Drive and Orange Avenue. There are bicycle lanes on both sides of the roadway and a two-way-left-turn-lane on Santa Cruz Avenue between Johnson Street and Olive Street. The width of the street varies between approximately 40 and 50 feet wide. On-street parking is allowed in certain segments of the corridor. Most of the intersections west of University Drive are side-street-stop controlled and unprotected for pedestrians crossing Santa Cruz Avenue. Some of the crossings have Rectangular Rapid Flashing Beacon installed to increase driver awareness of pedestrians crossing the roadway at the mid-block/unprotected intersections. The speed limit for this section is posted at 25 mph.



The traffic safety related issues raised by residents, school staff, city staff, and Menlo Park police for the Santa Cruz Avenue corridor are summarized as follows:

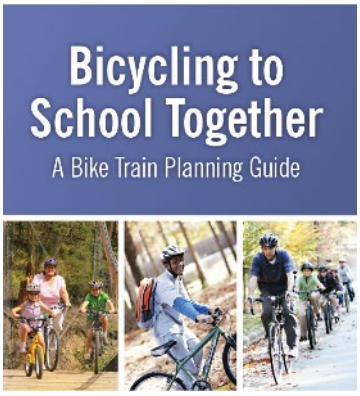
- Speeding e-bikes
- Speeding vehicles
- Bikes don't stop at stop signs
- Bicyclists don't wear helmets
- Garbage cans block bike lanes
- Left turns and right turns conflict with bikes
- Some vehicles don't yield to pedestrians at crosswalks
- Kids ride bikes on crosswalks
- Limited resource for enforcement



Most of these issues cannot be addressed solely through engineering solutions. The “3 Es” needed are: Education, Engineering, and Enforcement. The “3 Es” represents a comprehensive approach to solving issues and ensuring the effectiveness and sustainability of the solutions. Education raises awareness of the issues, provides skill development and provides the required knowledge of safety and promotes behavioral changes. Engineering is essential for ensuring safety, reliability, and to meet engineering standards. Enforcement ensures compliance with regulations and increases accountability.

This report focuses on engineering solutions. However, a few education and enforcement suggestions are also included in this section.

Educational Programs



- Print and distribute the Menlo Park Pedestrian and Bicycle safety handbook to all students and parents.
- Provide bicycle lights to e-bikers and enforce the rule that only e-bikes with lights can be used to commute to school. Send messages to parents who don’t have lights and parked at the school.
- Implement Bike Train program for school children. A Bike Train program is a community initiative designed to promote safe and enjoyable bicycling for children, particularly as a means of getting to and from school. It involves a group of children riding their bikes together along a pre-planned route, accompanied by adult supervisors. This type of program enhances bike safety since a group of bicyclists is more visible to motorists than individual riders, thereby reducing vehicle and bicycle conflicts.
- Continue encouraging students to use helmets while riding their bikes. If needed, parents should be informed if a student is consistently not wearing a helmet while riding a bike.

Enforcement Programs

- Increase the number of police allocated to traffic enforcement either by hiring or reallocating more resources.

Analysis

The Average Daily Volume (both directions) on Santa Cruz Avenue just in front of the Hillview Middle School is approximately 14,600 vehicles per day (vpd), with the highest volume of 1,620 vehicles per hour (vph) during the p.m. peak hour (3 p.m. to 4 p.m.). During the a.m. peak hour, the highest volume is at 1,380 vph between 7 a.m. and 8 a.m. Both peak hours coincide with the school timings. Figure 5-7 shows the distribution of start times for the trips that pass through the study corridor (Source: Replica data - https://www.replicahq.com/).

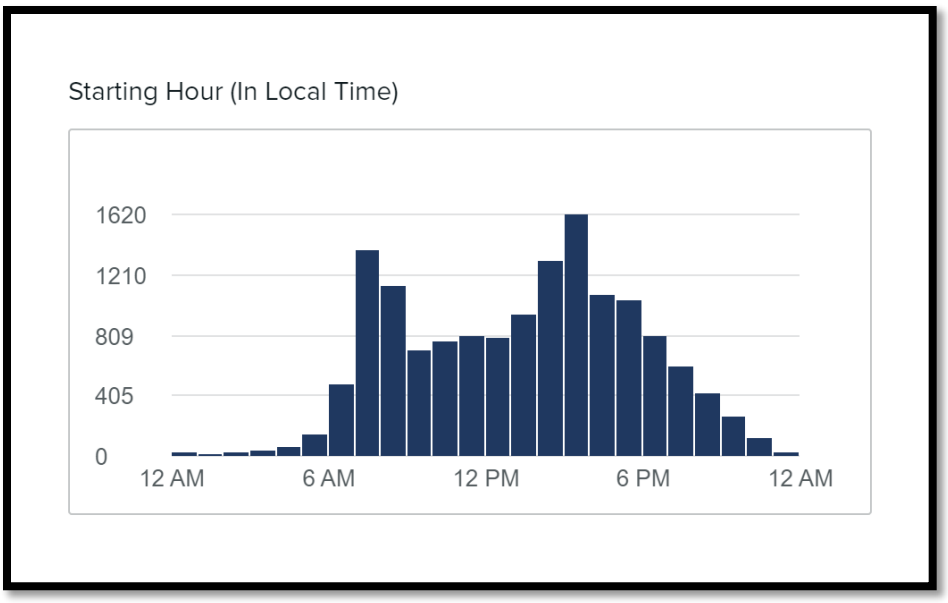


Figure 5-7: Santa Cruz Avenue Trip Start Time

Figure 5-8 shows the number of trips by each primary mode for the trips that travel on Santa Cruz Avenue. The primary mode of travel is cars (85 %), but commercial vehicle volume as shown is also high at 5.08%. Walking and bicycling modes of travel are also high, with bicycle trips comprising over 4% (Source: Replica data - https://www.replicahq.com/).

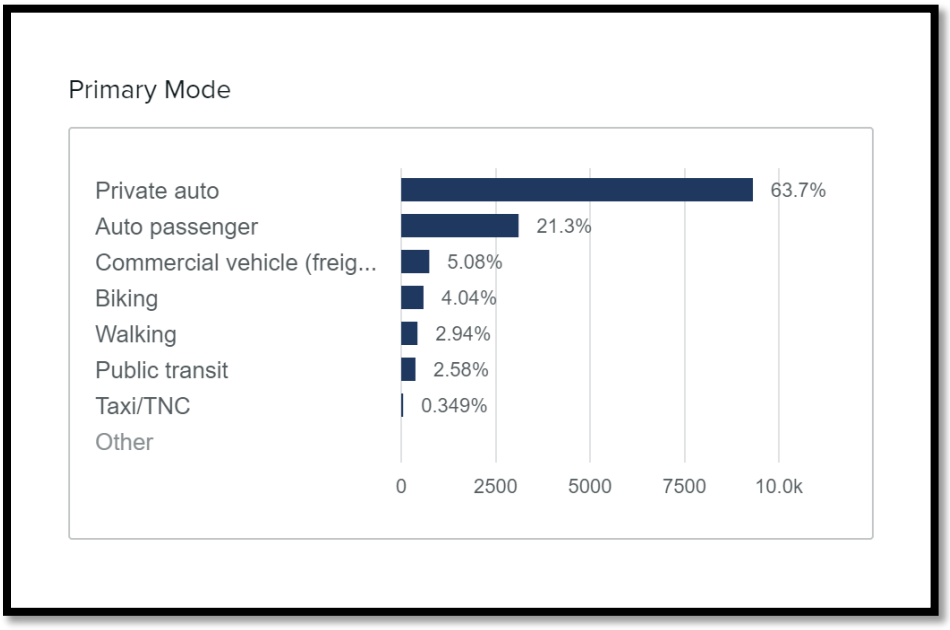


Figure 5-8: Santa Cruz Avenue Modes of Travel

Figure 5-9 shows the number of trips for each purpose for trips using the Santa Cruz corridor. Trip purpose is determined by the destination type of the trip. For example: If a person is traveling to work, the purpose of the trip is 'Work.' If a person is traveling to a restaurant, the purpose is 'Eat.' (Source: Replica data - https://www.replicahq.com/)

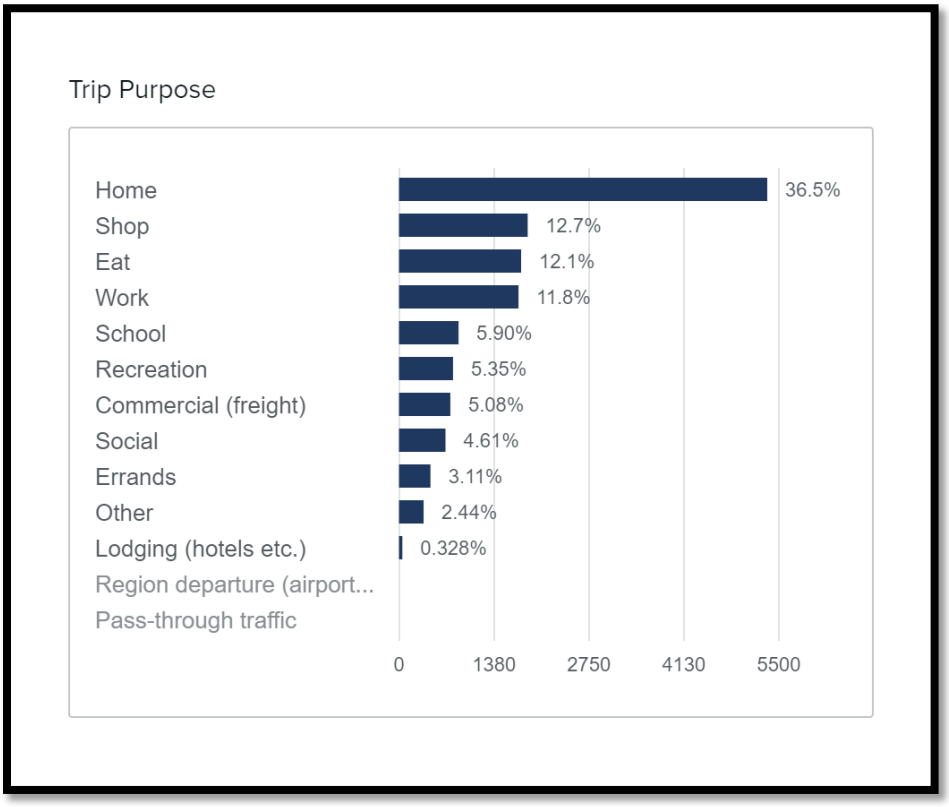


Figure 5-9: Santa Cruz Avenue Trip Purpose

Figure 5-10 shows the length of individual trips in miles. As shown in the figure, over 55% of the trips are between 2 and 8 miles, which shows that most of the trips are within the City of Menlo Park. The average trip length is 8.5 miles. (Source: Replica data - https://www.replicahq.com/)

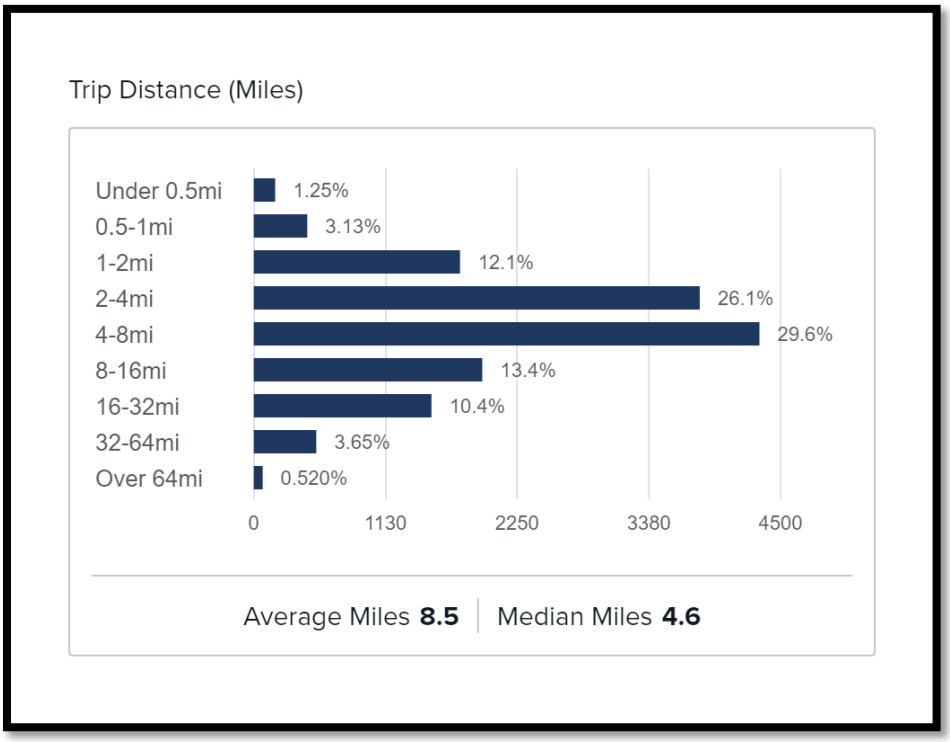


Figure 5-10: Santa Cruz Avenue Trip Distance

5.4.1. FOCUS AREA #1: Intersection of Santa Cruz Avenue and University Drive

Existing Conditions

The intersection of Santa Cruz Avenue and University Drive is a three-legged signalized intersection. The eastbound and the westbound traffic signal phases operate as split phases to accommodate the westbound left turn lane. Crosswalks are present on the south and west legs of the intersection. The crosswalk striping across Santa Cruz Avenue has decorative crosswalk marking. The intersection is shown in Figure 5-11.



Figure 5-11: Intersection of Santa Cruz Avenue and University Drive

Suggestions for Improvements

- Install a leading pedestrian interval at the intersection to make pedestrians more visible to right-turn vehicles.
- Upgrade 8'' signal heads to 12'' and install yellow signal back plates to make them more visible to drivers and bicyclists.



- Modify the traffic signal to remove the split phasing for the east-west movement and convert it to provide protected or protected/permission left turn phasing for the westbound left turn movement. Additionally, operations analysis should be conducted to determine the best operation for the intersection.
- Install truncated dome on the northside of the crosswalk on the west leg.
- Install bicycle boxes at the intersection.
- Install high visibility crosswalks.
- Conduct additional studies to evaluate the option of adding a crosswalk on the westside of the intersection.

5.4.2. FOCUS AREA #2: Intersection of Santa Cruz Avenue and Johnson Street

Suggestions for Improvements

This intersection serves as an example, but the suggestions apply to many intersections along the Santa Cruz Avenue corridor:

- Convert the two-way left turn lane to a left-turn-only lane for 50 feet next to the intersection to reduce driver confusion, as pictured in Figure 5-12. Drivers are not utilizing the two-way left turn lane and, instead, wait in the through lane before trying to make a left turn at the intersection. Drivers are much more familiar with driving along corridors with left turn lanes, so changing this into a left turn only lane would reduce driver confusion. There are no driveways along the corridor so there are very few drivers that utilize the two-way left turn lane to make the left turn from the other direction.
- Move the yield marking and its signage from 20 feet to 40 feet away from the crosswalk to give bicyclists and cars more time to stop and yield to pedestrians, as pictured in Figure 5-12. California Manual of Uniform Traffic Control Devices (CA MUTCD) suggests the placement of the yield marking anywhere between 20 to 50 feet from the crosswalk. Moving the yield marking further behind the crosswalk will warn bicyclists in the bike lane and drivers who are unable to see the pedestrian crossings earlier, giving them more time to stop for pedestrians and to see the left-turning cars that are turning at the intersection.
- Consider adding median islands (concrete or quick build) along with in-street pedestrian sign at crossings to improve pedestrian crossings.
- Provide a visual cue to drivers coming from the side street to expect bicycles, either using a green marking through the intersection or sharrows, as pictured in Figure 5-13. These visual cues should be used both at the intersections and at critical driveway locations such as the St. Raymond Catholic Elementary School driveway.
- Conduct a study to determine the possibility of restricting left turns to Johnson Street during school hours. This type of restriction requires a study to be conducted and alternative routes to be identified to ensure that such a change does not result in even more confusion. Because left turn restriction enforcement is not always possible, conflicting through movement cars may not be expecting any illegal left turns at the intersection during school hours, which may cause potential confusion.



- Rotate the "crosswalk ahead" sign to face the correct direction and properly indicate the presence of the crosswalk.
- Prioritize implementation of mandated daylighting to prevent cars from parking within 20 feet of the crosswalk. Focus enforcement on these intersections along Santa Cruz Avenue to enhance overall corridor safety, given that sight distance issues have been identified at these intersections.



Figures 5-12 and 5-13 illustrate the suggested concepts for the intersection of Santa Cruz Avenue and Johnson Street.



Figure 5-12: Intersection of Santa Cruz Avenue and Johnson Street Concept Plan

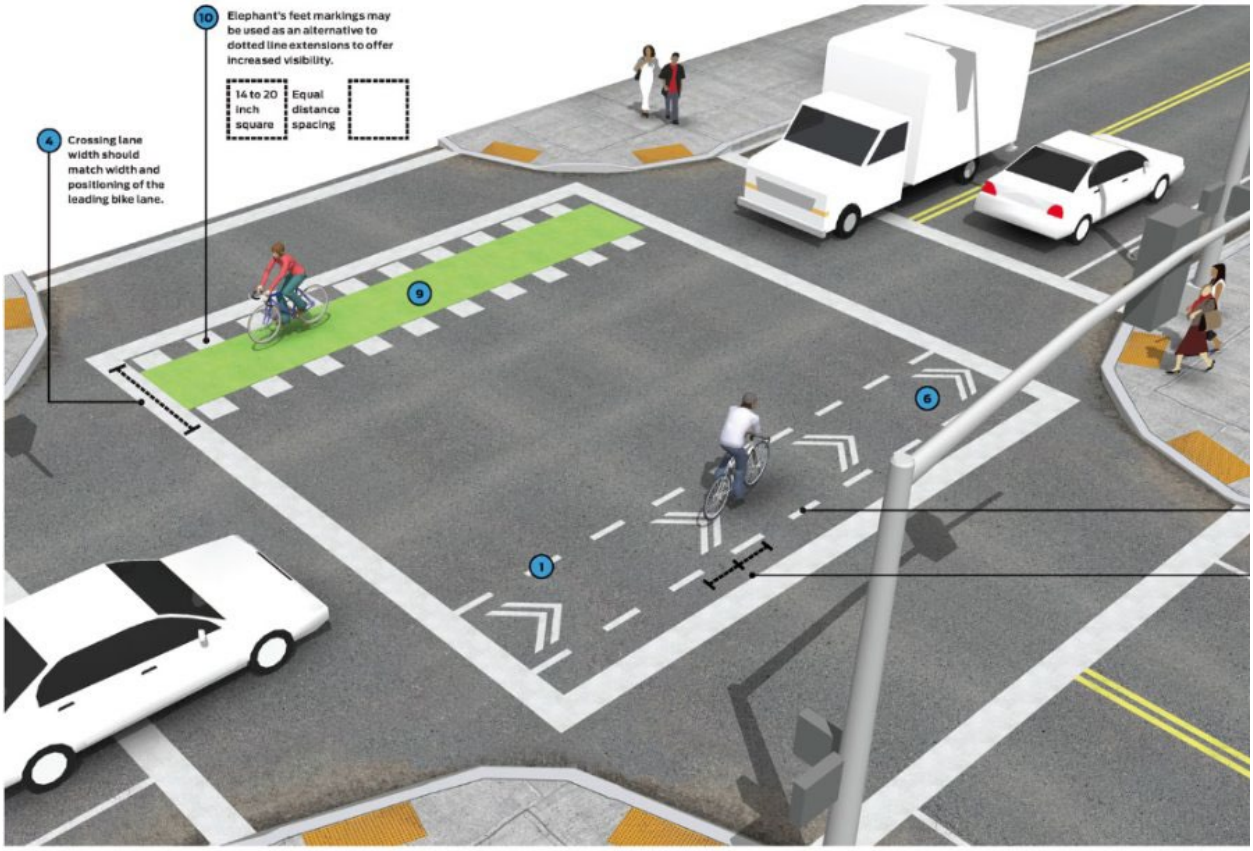


Figure 5-13: Intersection of Santa Cruz Avenue and Johnson Street Concept Plan

5.4.3. FOCUS AREA #3: St. Raymond Catholic Elementary School Driveway

Suggestions for Improvements

- Paint green or sharrow bike lane markings at the driveway to visually warn drivers to expect bicycles.
- Conduct a study to restrict left turns on to Santa Cruz Avenue during school time (a.m. peak). No left turn signage during peak periods would alleviate the considerable backup that currently builds up on the driveway during the a.m. peak. The current two-way left turn lane is ineffective, as most drivers do not utilize the two-way left turn lane and instead wait for gaps in both directions before turning left onto Santa Cruz Avenue.

Figure 5-14 shows the St. Raymond Catholic Elementary School Driveway, which gets congested during the a.m. peak period.



Figure 5-14: St. Raymond Catholic Elementary School Driveway

5.4.4. FOCUS AREA #4: Intersection of Santa Cruz Avenue and San Mateo Drive

Suggestions for Improvements

This intersection has already been identified as one that needs improvement as part of Menlo Park's Transportation Improvement Program because it provides the main access to the bike bridge. The following are suggestions that aligns with the city's existing plans for improvement:

- Install more prominent wayfinding signage for the bike bridge.
- Install bulb-out on the southwest corner of the intersection on San Mateo Drive.
- Install high-visibility crosswalk on the southside of San Mateo Drive leg. Consider conducting a study to determine if additional signage and/or a RRFB is needed for the crosswalk.

5.4.5. FOCUS AREA #5: Intersection of Santa Cruz Avenue and Olive Street

Suggestions for Improvements

- Assign two crossing guards to the two heavily used crosswalks (N-S and E-W) to adequately manage the large number of students entering and exiting the school.
- Install High-Intensity Activated Crosswalk (HAWK) pedestrian signals at the intersection to increase pedestrian safety and reduce traffic. The HAWK system shows flashing red and yellow lights when pedestrians are crossing but remains blank throughout the day, therefore only impacting drivers when pedestrians are crossing the intersection.
  - Extend the HAWK times to give children more time to cross the street and meter traffic at the intersection specifically during the school break when there are a lot of children crossing.
  - Along with the HAWK, install no-left turn blank out signs that restrict drivers coming out of Olive Street only when pedestrians are crossing.
  - Install bollards on Olive Street to separate pedestrian walking areas from vehicular traffic areas.



- Re-time the signal at Elder Avenue according to school drop-off and pick-up times to reduce traffic flow in front of the school during peak periods. Delays may also encourage drivers to use alternative routes if they drive through the intersection on a regular basis.
- Implement Class II bike lanes on Olive Street.
- Move shark tooth payment marking to properly align with its corresponding sign.
- Install speed radar signs to discourage speeding.

Figure 5-15 shows the crosswalk at the Santa Cruz Avenue and Olive Street intersection.



Figure 5-15: Santa Cruz Avenue and Olive Street Intersection

5.4.6. FOCUS AREA #6: Intersection of Santa Cruz Avenue and Orange Avenue

Suggestions for Improvements

This intersection has already been identified as needing improvement as part of Menlo Park's Transportation Improvement Program. Following are the suggestions that align with the city's existing plans for improvement:

- Install traffic signal as according to the completed signal warrant analysis.
- Reduce curb radius at the southeast corner of the intersection to reduce car speeds around the turn.
- Bring bike lane to the left side of the northbound Santa Cruz Avenue right-turn lane so the two do not conflict.

General Suggestions for Improvement

- Trim trees that block signs, as pictured in Figure 5-16.
- Implement two-way separated bike lane on one side of the street with a buffer of either parked cars or bollards to increase bike rider safety, as pictured in figures 5-17 and 5-18. Prior to implementing two-way separated bike lanes, a comprehensive study should be

conducted to determine if this could potentially increase conflicts at the driveways and intersections along the corridor.

- A two-way separated bike lane creates a much safer 12-foot bike lane, especially because the majority of bicyclists go in the same direction for the morning peak and the opposite direction for the afternoon peak and would benefit from the extra lane during these periods.
- The separate protected lane allows faster e-bikes to overtake regular bicyclists safely. It also provides a much larger buffer for bicyclists to maneuver around the garbage cans that often block the bike lane, as pictured in Figure 5-19.
- This would require drivers to look for bicyclists coming from both directions when turning onto the roadway from a driveway or side street. Proper signage should be installed to inform drivers to look for bikes coming from both directions.

Figures 5-16, 5-17, 5-18, and 5-19 illustrate the existing conditions and potential improvements outlined above.



Figure 5-16: Trees Blocking Street Sign



Figure 5-17: Existing One-Way Bike Lane

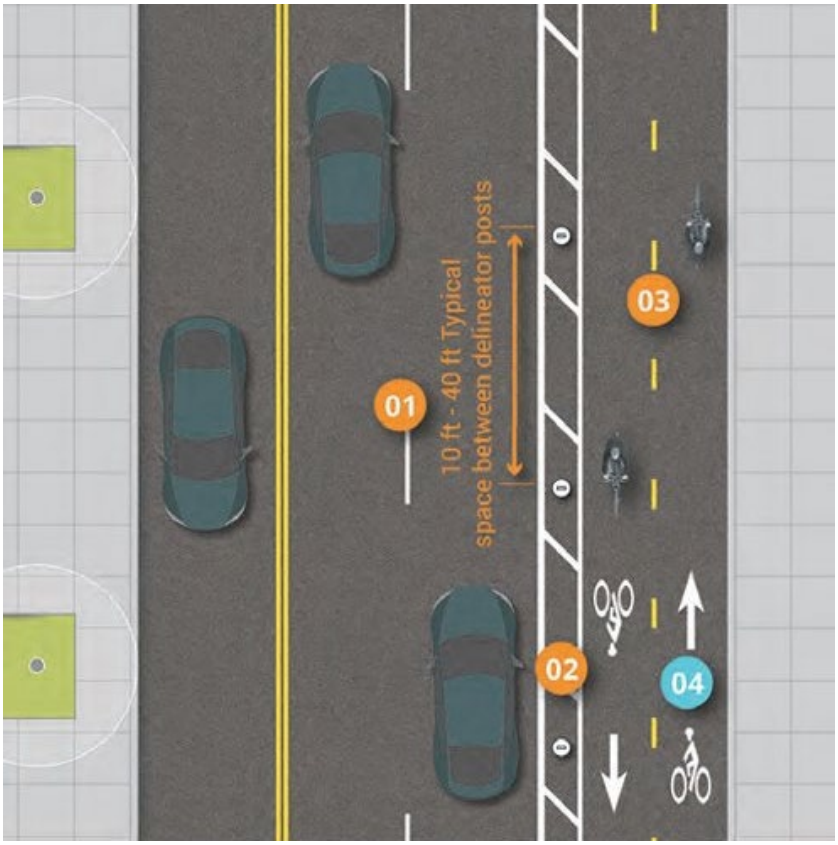


Figure 5-18: Two-Way Bike Lane Concept



Figure 5-19: Garbage Cans Blocking Bike Lane

Sand Hill Road Corridor Between Oak Avenue and Junipero Serra Boulevard

The city would like to reduce speeding and improve bicycle safety on the Sand Hill Road corridor. Sand Hill Road between Oak Avenue and US-280 has large, signalized intersections, through which drivers speed. The 85th percentile speed on this corridor is 45 mph. Some of the intersections on Sand Hill Road are high priority locations identified in the Vision Zero Action Plan.





Sand Hill Road is a four-lane major east-west arterial that carries regional traffic and provides access to US-280 freeway. There are bicycle lanes on both sides of the roadway and the directional traffic is separated by a median. The width of the street is approximately 60 to 70 feet. On-street parking is not allowed on Sand Hill Road. Most of the intersections are large and are signalized. The speed limit for this section is posted at 40 mph. Sand Hill Road provides access to Stanford University.

Analysis

The Average Daily Volume (both directions) on Sand Hill Road just east of Santa Cruz Avenue is approximately 30,900 vehicles per day (vpd), with the highest volume of 2,620 vehicles per hour (vph) during the p.m. peak hour (3 p.m. to 4 p.m.), and 2,370 vph during the a.m. peak hour (7 a.m. to 8 a.m.). Figure 5-20 shows the distribution of start times for trips that pass through the study corridor (Source: Replica data - https://www.replicahq.com/).

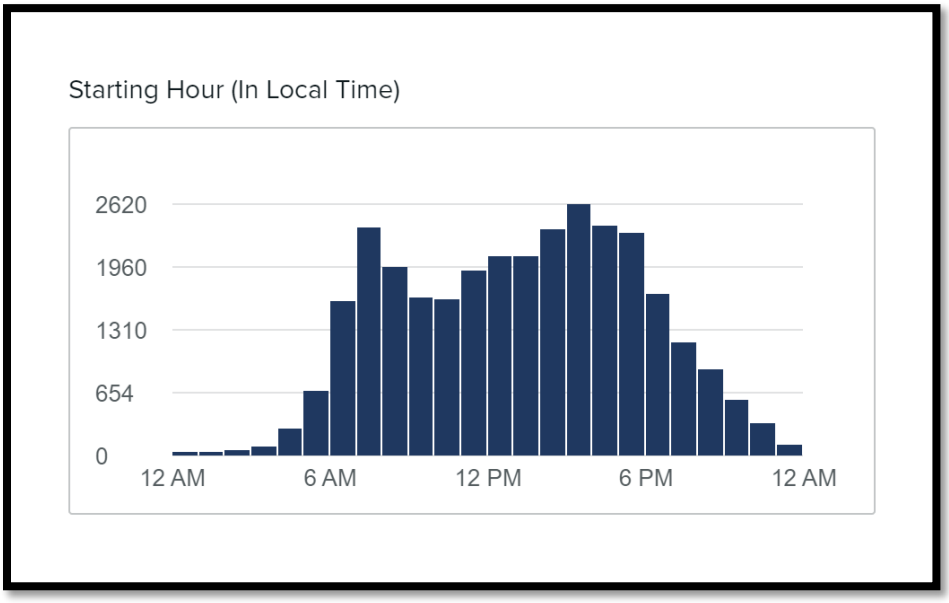


Figure 5-20: Sand Hill Road Trip Start Time

Figure 5-21 shows the number of trips by each primary mode for travel on Sand Hill Road. As expected, the primary mode of travel is cars (89.8%), however commercial vehicle volume as shown is also very high at 8.54% (Source: Replica data - https://www.replicahq.com/).

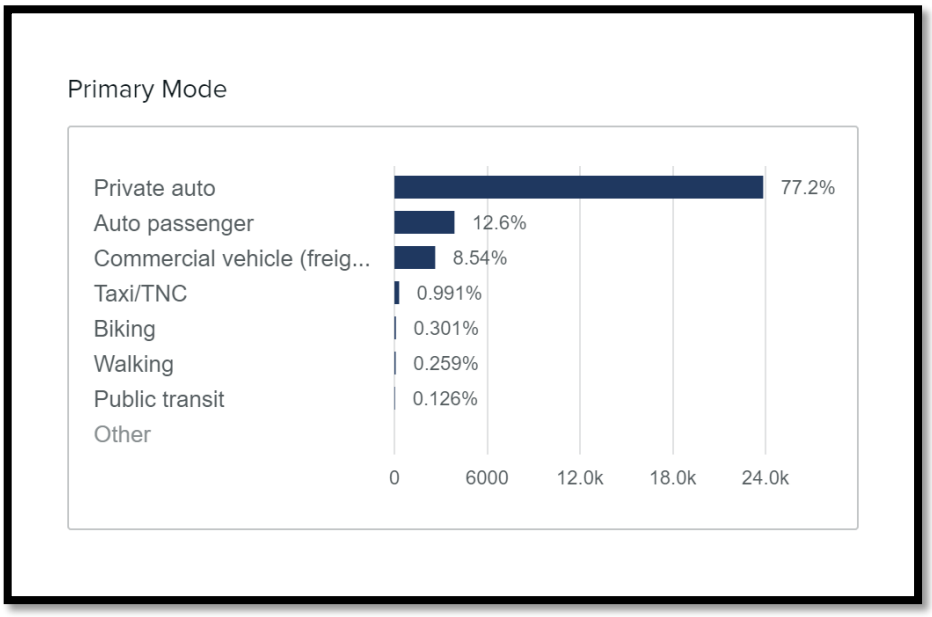


Figure 5-21: Sand Hill Road Modes of Travel

Figure 5-22 shows the number of trips for each purpose for trips using Sand Hill Road. (Source: Replica data - https://www.replicahq.com/)

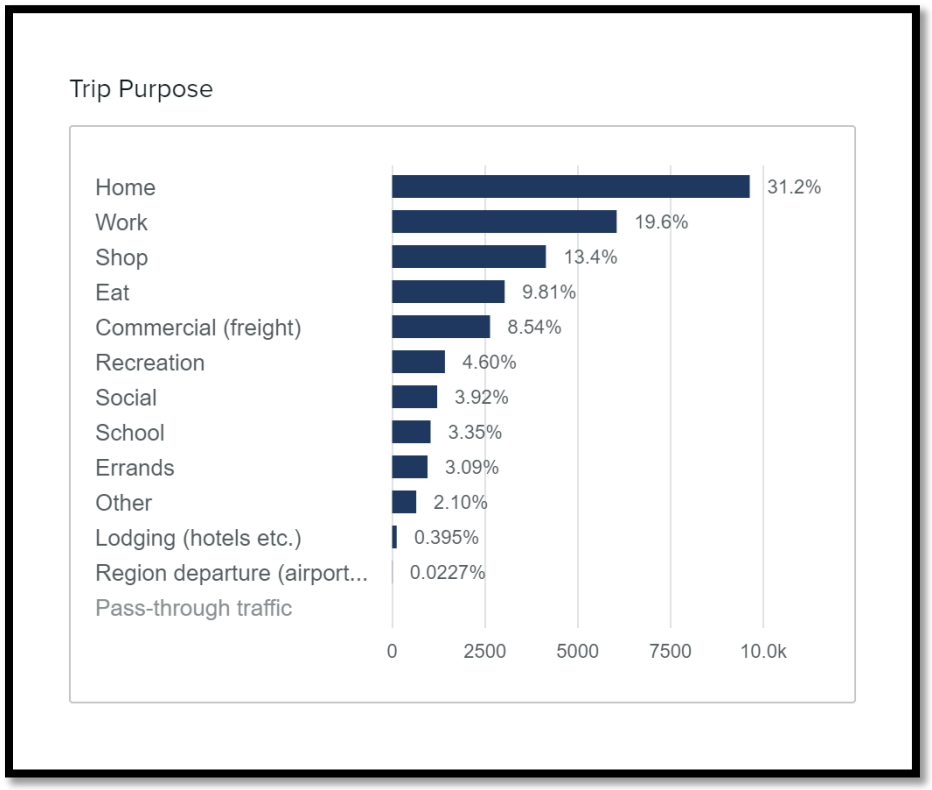


Figure 5-22: Sand Hill Road Trip Purpose

Figure 5-23 shows the length of individual trips. As shown in the figure, approximately 46% of trips are over 16 miles, which indicates that Sand Hill Road carries regional trips by providing access to the US-280 freeway. (Source: Replica data - https://www.replicahq.com/)

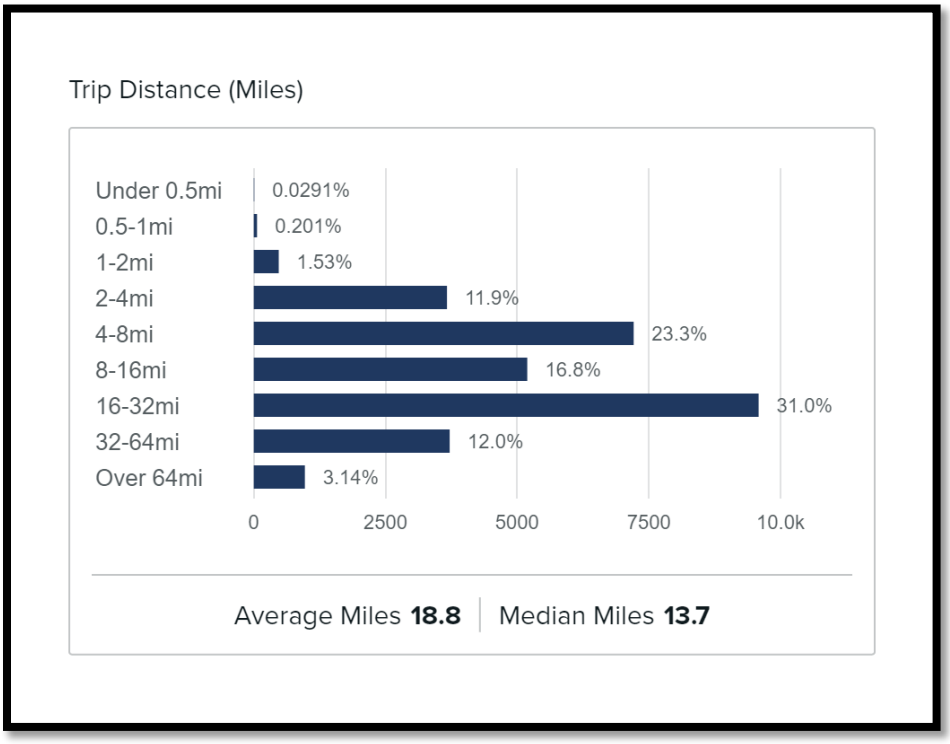


Figure 5-23: Sand Hill Road Trip Distance

5.4.7. FOCUS AREA #7: Intersection of Sand Hill Road and Oak Avenue

The intersection of Sand Hill Road and Oak Avenue is a three-legged signalized intersection with crosswalks on the north and west leg of the intersection. There is a pedestrian/bicycle bridge on the southside of the intersection that provides direct access to Stanford University, and it is heavily used by the university staff and students. However, bicyclists from Oak Avenue must use the pedestrian push button to cross Sand Hill Road, which is difficult to press without having to get off their bicycles. There is no bike lane striping at this intersection to cross Sand Hill Road. The intersection is shown in Figure 5-24.



Figure 5-24: Intersection of Sand Hill Road and Oak Avenue

Suggestions for Improvements

This intersection has already been identified as one that needs improvement, and Stanford University had conducted previous studies to make improvements at the intersection to provide better access to the bike bridge located on the south side of the intersection. The following are suggestions align with the city's existing plans for improvement:

- Install a bicycle push button on southbound Oak Avenue sidewalk to allow bicyclists to push the button while remaining in the right turn lane, as pictured in Figure 5-25, making it easier to cross the intersection. Explore the possibility of bike detection using existing and/or upgraded cameras along with a pavement marking to visually inform bicyclists, as pictured in Figure 5-25.
- Restripe the faded bike lanes. Consider converting existing bike lanes on Sand Hill Road to separated bike lanes by adding bollards.
- Reconstruct the northwest corner and move pedestrian signal pole and signal.
- Upgrade ADA ramps to meet ADA requirements.
- Increase pedestrian crossing time.
- Convert existing crosswalks to high-visibility crosswalks.
- Install wayfinding signage along the trail.
- Remove median island located within the intersection to allow left turns from Sand Hill Road into Oak Avenue.
- Install two-stage left-turn boxes on westbound Sand Hill Road and southbound Oak Avenue for bicyclists to use to make left turns instead of having to make the left turn from the left turn lanes on the high-speed roadway.
- Install two-way bicycle signals on northwest and southwest corners.
- Prohibit right-turns-on-red on southbound Oak Avenue and westbound Sand Hill Road to protect bicyclists and pedestrians.

Figure 5-25 illustrates the proposed bike push button and pavement marking installations for the Sand Hill Road and Oak Avenue intersection.



Figure 5-25: Bicycle Detector Pavement Marking and Push Button

Figure 5-26 illustrates suggested improvements based on the study conducted by Stanford University to improve bicycle crossing at the intersection.

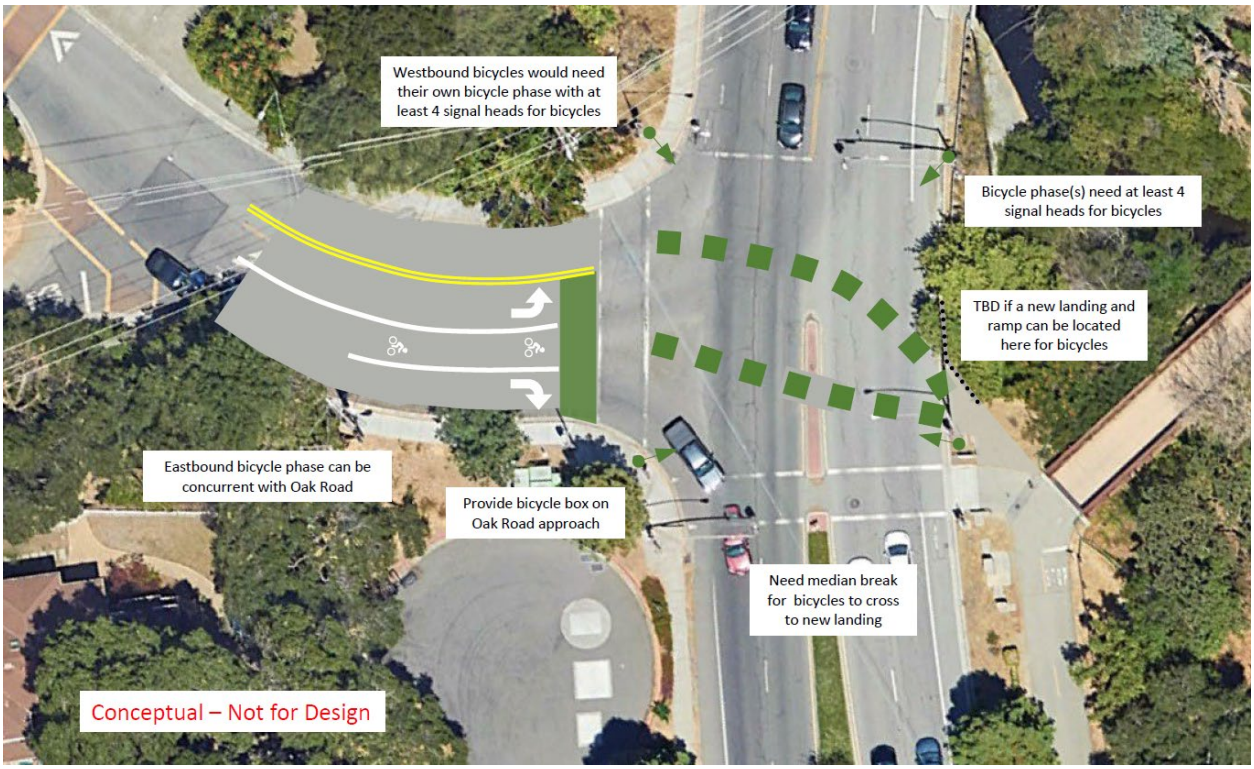


Figure 5-26: Illustration from Standard University Study

5.4.8. FOCUS AREA #8: Intersection of Sand Hill Road and Santa Cruz Avenue

Suggestions for Improvements



- Install flashing speed advisory signs on Sand Hill Road between Oak Avenue and Santa Cruz Avenue in the westbound direction as well as between Sharon Park Drive and Santa Cruz Avenue in the eastbound direction to reduce speeding.
- Install high-visibility crosswalks on all four sides.
- Install green bike lane marking west of the intersection for the westbound direction along with bollards, if feasible, to separate the bike lane and prevent drivers from using it to make right turns. Consider converting to existing bike lane on Sand Hill Road to separated bike lane by adding bollards.
- Upgrade ADA ramps to meet ADA standards.
- Install cat-tracks (guide lines) through the intersection for the left-turn lanes to guide drivers through the large, high-traffic intersection. Conduct a study to determine the cost effectiveness of converting the cat-tracks to lighted cat-tracks at the intersection. It is noted that lighted cat-tracks can be a potential maintenance hazard, so a study to understand the maintenance needs prior to installation is recommended.



- Install wayfinding signage to the bike path along Sand Hill Road.
- Conduct analysis to determine whether "no right turn on red" is a good option for this intersection. This would improve pedestrian safety and reduce conflict between vehicles and pedestrians. However, a study must be conducted to understand its implication on overall traffic congestion at the intersection.
- Consider converting this intersection to a protected intersection. Protected intersections aim to enhance the safety and efficiency of intersections for all users, particularly bicyclists and pedestrians. Protected intersections have been successfully implemented in various cities around the world, particularly in countries like the Netherlands, which is renowned for its bicycle-friendly infrastructure. In California, cities including Davis, Fremont, Oakland, and others have begun incorporating protected intersection designs to improve safety for all road users.

5.4.9. FOCUS AREA #9: Intersection of Sand Hill Road and Sharon Park Drive

Suggestions for Improvements

- Investigate whether video detection cameras can detect bicycles at this intersection for southbound Sharon Park.
- Add green bicycle striping on Sand Hill Road near the intersection for the westbound direction and bollards along with a solid white line to restrict right-turning cars from blocking the bike lane at the intersection.
- Install green bike lane marking west of the intersection for the westbound direction to prevent cars from using the bike lane to turn into Sand Hill Road. Add bollards to separate the bike lane if feasible.



- Install a "yield to pedestrians" sign for left-turning cars for southbound Sharon Park.
- Consider installing a separated bicycle lane on Sharon Park to guide bicyclists through the intersection.
- Restripe crosswalk to replace worn-out striping, as pictured in Figure 5-27.

Figure 5-27 shows the poor crosswalk striping on the Sand Hill Road intersection.



Figure 5-27: Worn Out Crosswalk Striping

5.4.10. FOCUS AREA #10: Intersection of Sand Hill Road and Junipero Serra Boulevard

Suggestions for Improvements

- Install green striping in the transition from bike lane to right-turn lane to guide bicyclists across the right-turn lane.
- Install bike boxes on Junipero Serra Boulevard and southbound Santa Cruz Avenue.
- Explore two-stage crossing for bicyclists as they are in direct conflict with the high volume of left-turners coming out of Junipero Serra Boulevard without a separate signal that can be triggered for bicyclists to cross.
- Consider a bicycle box on Junipero Serra at the intersection.
- Consider installing a cycle track on the southside of Junipero Serra. Coordination will be needed between the city and San Mateo County, since this intersection is shared between the two jurisdictions.

CONTRIBUTING AUTHORS

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ABOUT THE PROGRAM

The Complete Streets Safety Assessment (CSSA) conducts comprehensive transportation safety assessments that focus on pedestrian and bicycle safety. The aim of the CSSA is to help communities identify and implement traffic safety solutions that lead to improved safety and accessibility for all users, especially people walking and biking, on California's roadways.

The Safe Transportation Research and Education Center (SafeTREC) is a University of California, Berkeley research center affiliated with the Institute of Transportation Studies and the School of Public Health. Our mission is to inform decision-making and empower communities to improve roadway safety for all. We envision a world with zero roadway fatalities or serious injuries and a culture that prioritizes safe mobility.

For more information, visit: https://safetrec.berkeley.edu or email us at safetrec@berkeley.edu.

Appendix A: Glossary of Pedestrian Improvement Measures

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Traffic Control Countermeasures			
Traffic Signal or All-Way Stop	Conventional traffic control devices with warrants for use based on the Manual on Uniform Control Devices (MUTCD).	Reduces pedestrian-vehicle conflicts and slows traffic speeds.	Must meet warrants based on traffic and pedestrian volumes; however, exceptions are possible based on demonstrated pedestrian safety concerns (Crash history).
Pedestrian Hybrid Beacon	PHBs (Pedestrian Hybrid Beacons) are pedestrian-actuated signals that are a combination of a beacon flasher and a traffic control signal. When actuated, PHBs display a yellow (warning) indication followed by a solid red light. During pedestrian clearance, the driver sees a flashing red "wig-wag" pattern until the clearance interval has ended and the signal goes dark.	Reduces pedestrian-vehicle conflicts and slows traffic speeds.	Useful in areas where it is difficult for pedestrians to find gaps in automobile traffic to cross safely, but where normal signal warrants are not satisfied. Appropriate for multi-lane roadways.
Overhead Flashing Beacons	Flashing amber lights are installed on overhead signs, in advance of the crosswalk or at the entrance to the crosswalk.	The blinking lights during pedestrian crossing times increase the number of drivers yielding for pedestrians and reduce pedestrian-vehicle conflicts. This measure can also improve conditions on multi-lane roadways.	Best used in places where motorists cannot see a traditional sign due to topography or other barriers.

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Rectangular Rapid Flashing Beacon	A Rectangular Rapid Flashing Beacon (RRFB) is a pedestrian-actuated enhancement that improves safety at uncontrolled, marked crossings.	FHWA states that research indicates RRFBs can result in motorist yielding rates as high as 98 percent at marked crosswalks. Solar panels reduce energy costs associated with maintenance of the device.	Appropriate for multi-lane roadways.
In-Roadway Warning Lights	Both sides of a crosswalk are lined with pavement markers, often containing an amber LED strobe light. The lights may be push-button activated or activated with pedestrian detection.	This measure provides a dynamic visual cue and is increasingly effective in bad weather.	Best in locations with low bicycle ridership, as the raised markers present a hazard to bicyclists. May not be appropriate in areas with heavy winter weather due to high maintenance costs. May not be appropriate for locations with bright sunlight. The lights may cause confusion when pedestrians fail to activate them and/or when they falsely activate.
High-Visibility Signs and Markings	High-visibility markings include a family of crosswalk striping styles including the “ladder” and the “triple four.” One style, the zebra-style crosswalk pavement markings, were once popular in Europe, but have been phased out because the signal-controlled puffin is more effective (see notes). High-visibility fluorescent yellow green signs are made of the approved fluorescent yellow-green color and posted at crossings to increase the visibility of a pedestrian crossing ahead.	FHWA recently ended its approval process for the experimental use of fluorescent yellow crosswalk markings and found that they had no discernible benefit over white markings.	Beneficial in areas with high pedestrian activity, as near schools, and in areas where travel speeds are high and/or motorist visibility is low.

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
In-Street Pedestrian Crossing Signs	This measure involves posting regulatory pedestrian signage on lane edge lines and road centerlines. The In-Street Pedestrian Crossing sign may be used to remind road users of laws regarding right of way at an unsignalized pedestrian crossing. The legend STATE LAW may be shown at the top of the sign if applicable. The legends STOP FOR or YIELD TO may be used in conjunction with the appropriate symbol.	This measure is highly visible to motorists and has a positive impact on pedestrian safety at crosswalks.	Mid-block crosswalks, unsignalized intersections, low-speed areas, and two-lane roadways are ideal for this pedestrian treatment. The STOP FOR legend shall only be used in states where the state law specifically requires that a driver must stop for a pedestrian in a crosswalk.
Pedestrian Crossing Flags	Square flags of various colors, which are mounted on a stick and stored in sign-mounted holders on both side of the street at crossing locations; they are carried by pedestrians while crossing a roadway.	This measure makes pedestrians more visible to motorists.	Appropriate for mid-block and uncontrolled crosswalks with low visibility or poor sight distance.
Advanced Yield Lines	Standard white stop or yield limit lines are placed in advance of marked, uncontrolled crosswalks.	This measure increases the pedestrian's visibility to motorists, reduces the number of vehicles encroaching on the crosswalk, and improves general pedestrian conditions on multi-lane roadways. It is also an affordable option.	Useful in areas where pedestrian visibility is low and in areas with aggressive drivers, as advance limit lines will help prevent drivers from encroaching on the crosswalk. Addresses the multiple-threat Crash on multi-lane roads.
Geometric Treatments			
Pedestrian Overpass/ Underpass	This measure consists of a pedestrian-only overpass or underpass over a roadway. It provides complete separation of pedestrians from motor vehicle traffic, normally where no other pedestrian facility is available, and connects off-road trails and paths across major barriers.	Pedestrian overpasses and underpasses allow for the uninterrupted flow of pedestrian movement separate from the vehicle traffic.	Grade separation via this measure is most feasible and appropriate in extreme cases where pedestrians must cross roadways such as freeways and high-speed, high-volume arterials. This measure should be considered a last resort, as it is expensive and visually intrusive.

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Road Diet (aka Lane Reduction)	The number of lanes of travel is reduced by widening sidewalks, adding bicycle and parking lanes, and converting parallel parking to angled or perpendicular parking.	This is a good traffic calming and pedestrian safety tool, particularly in areas that would benefit from curb extensions but have infrastructure in the way. This measure also improves pedestrian conditions on multi-lane roadways.	Roadways with surplus roadway capacity (typically multi-lane roadways with less than 15,000 to 17,000 ADT) and high bicycle volumes, and roadways that would benefit from traffic calming measures.
Median Refuge Island	Raised islands are placed in the center of a roadway, separating opposing lanes of traffic with cutouts for accessibility along the pedestrian path.	This measure allows pedestrians to focus on each direction of traffic separately, and the refuge provides pedestrians with a better view of oncoming traffic as well as allowing drivers to see pedestrians more easily. It can also split up a multi-lane road and act as a supplement to additional pedestrian tools.	Suggested for multi-lane roads wide enough to accommodate an ADA-accessible median.
Staggered Median Refuge Island	This measure is similar to traditional median refuge islands; the only difference is that the crosswalks in the roadway are staggered such that a pedestrian crosses half the street and then must walk towards traffic to reach the second half of the crosswalk. This measure must be designed for accessibility by including rails and truncated domes to direct sight-impaired pedestrians along the path of travel.	Benefits of this tool include an increase in the concentration of pedestrians at a crossing and the provision of better traffic views for pedestrians. Additionally, motorists are better able to see pedestrians as they walk through the staggered refuge.	Best used on multi-lane roads with obstructed pedestrian visibility or with off-set intersections.

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Curb Extension	Also known as a pedestrian bulb-out, this traffic-calming measure is meant to slow traffic and increase driver awareness. It consists of an extension of the curb into the street, making the pedestrian space (sidewalk) wider.	Curb extensions narrow the distance that a pedestrian has to cross and increases the sidewalk space on the corners. They also improve emergency vehicle access and make it difficult for drivers to turn illegally.	Due to the high cost of installation, this tool would only be suitable on streets with high pedestrian activity, on-street parking, and infrequent (or no) curb-edge transit service. It is often used in combination with crosswalks or other markings.
Reduced Curb Radii	The radius of a curb can be reduced to require motorists to make a tighter turn.	Shorter radii narrow the distance that pedestrians have to cross; they also reduce traffic speeds and increase driver awareness (like curb extensions), but are less difficult and expensive to implement.	This measure would be beneficial on streets with high pedestrian activity, on-street parking, and no curb-edge transit service. It is more suitable for wider roadways and roadways with low volumes of heavy truck traffic.
Curb Ramps	Curb ramps are sloped ramps that are constructed at the edge of a curb (normally at intersections) and are bi-directional (if applicable), as a transition between the sidewalk and a crosswalk.	Curb ramps provide easy access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcarts, bicycles, and also for pedestrians with mobility impairments who have trouble stepping up and down high curbs.	Curb ramps must be installed at all intersections and mid-block locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act and 1990 Americans with Disabilities Act). Where feasible, separate curb ramps for each crosswalk at an intersection should be provided rather than having a single ramp at a corner for both crosswalks.

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Raised Crosswalk	A crosswalk whose surface is elevated above the travel lanes.	Attracts drivers' attention; encourages lower travel speeds by providing visual and tactile feedback when approaching the crosswalk.	Appropriate for multi-lane roadways, roadways with lower speed limits that are not emergency routes, and roadways with high levels of pedestrian activity, such as near schools, shopping malls, etc.
Chicanes	A chicane is a sequence of tight serpentine curves (usually an S-shape curve) in a roadway, used on city streets to slow cars.	This is a traffic-calming measure that can improve the pedestrian environment and pedestrian safety.	Chicanes can be created on streets with higher volumes, given that the number of through lanes is maintained; they can also be created on higher-volume residential streets to slow traffic. Chicanes may be constructed by alternating parallel or angled parking in combination with curb extensions.
Pedestrian Access and Amenities			
Marked Crosswalk	Marked crosswalks should be installed to provide designated pedestrian crossings at major pedestrian generators, crossings with significant pedestrian volumes (at least 15 per hour), crossings with high vehicle-pedestrian Crashes, and other areas based on engineering judgment.	Marked crosswalks provide a designated crossing, which may improve walkability and reduce jaywalking.	Marked crosswalks alone should not be installed on multi-lane roads with more than about 10,000 vehicles/ day. Enhanced crosswalk treatments (as presented in this table) should supplement the marked crosswalk.

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Textured Pavers	Textured pavers come in a variety of materials (for example, concrete, brick, and stone) and can be constructed to create a textured pedestrian surface such as a crosswalk or sidewalk. Crosswalks are constructed with the pavers, or can be made of stamped concrete or asphalt.	Highly visible to motorists, this measure provides a visual and tactile cue to motorists and delineates a separate space for pedestrians, as it provides a different texture to the street for pedestrians and motorists. It also aesthetically enhances the streetscape.	Appropriate for areas with high volumes of pedestrian traffic and roadways with low visibility and/or narrow travel ways, as in the downtown area of towns and small cities.
Anti-Skid Surfacing	Surface treatment is applied to streets to improve skid resistance during wet weather. This is a supplementary tool that can be used to reduce skidding in wet conditions.	Improves driver and pedestrian safety.	Appropriate for multi-lane roadways and roadways with higher posted speed limit and/or high vehicle volumes or Crash rates.
Accessibility Upgrades	Treatments such as audible pedestrian signals, accessible push buttons, and truncated domes should be installed at crossings to accommodate disabled pedestrians.	Improves accessibility of pedestrian facilities for all users.	Accessibility upgrades should be provided for all pedestrian facilities following a citywide ADA Transition Plan.
Pedestrian Countdown Signal	Displays a “countdown” of the number of seconds remaining for the pedestrian crossing interval. In some jurisdictions the countdown includes the walk phase. In other jurisdictions, the countdown is only displayed during the flashing don’t walk phase.	Increases pedestrian awareness and allows them the flexibility to know when to speed up if the pedestrian phase is about to expire.	All pedestrian signals should incorporate countdown signals. The signals should be prioritized for areas with pedestrian activity, roadways with high volumes of vehicular traffic, multi-lane roadways, and areas with elderly or disabled persons (who may walk slower than others may).
Transit			

PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
High-Visibility Bus Stop Locations	This measure should include siting bus stops on the far side of intersections, with paved connections to sidewalks where landscape buffers exist.	Provides safe, convenient, and inviting access for transit users; can improve roadway efficiency and driver sight distance.	Appropriate for all bus stops subject to sight distance and right-of-way constraints.
Transit Bulb	Transit bulbs or bus bulbs, also known as nubs, curb extensions, or bus bulges are a section of sidewalk that extends from the curb of a parking lane to the edge of the through lane.	Creates additional space at a bus stop for shelters, benches, and other passenger amenities.	Appropriate at sites with high patron volumes, crowded city sidewalks, and curbside parking.
Enhanced Bus Stop Amenities	Adequate bus stop signing, lighting, a bus shelter with seating, trash receptacles, and bicycle parking are desirable features at bus stops.	Increase pedestrian visibility at bus stops and encourage transit ridership.	Appropriate at sites with high patron volumes.

Appendix B: Glossary of Bicycling Improvement Measures

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
LINKS /ROADWAY SEGMENTS			
A. Road Design and Operations to Slow Traffic			
Traffic Calming	There are a variety of measures too numerous to list here. See ITE Institute of Transportation Engineers, "Traffic Calming: State of the Practice".	Reduces motor vehicle speeds, which improves safety for all modes and increases bicyclist's comfort.	Urban and suburban settings; suggested for urban major streets with prevailing speeds of 35 mph and higher and for suburban major streets with prevailing speeds 45 mph or higher; and for all local streets with speeds of 30+ mph.
Bicycle Boulevard	A minor street on which traffic control devices are designed and placed to encourage cycling; these include: unwarranted stop signs along bike route are removed; crossing assistance at major arterials is provided (see examples in Nodes-Section E below).	Allows cyclists to maintain their travel speeds, significantly reducing their travel time; provides cyclists with a low volume, low speed street where motorists are aware that it is a bicycle-priority street.	On minor streets with less than 3000 vehicles per day especially useful when Bike Blvd is parallel to and within ¼ mile of a major arterial with many desirable destinations.
Signal Coordination at 15 -25 mph	The signal timing along a corridor is set so that traffic which receives a green light at the first intersection will subsequently receive a green light at all downstream intersections if they travel at the design speed; aka a "green wave."	Encourages motorists to travel at slower speeds, provides a more comfortable experience for cyclists and increases overall traffic safety; also allows cyclists to hit the green lights, so that they can maintain their travel speeds, significantly reducing their travel time.	Urban settings, typically downtown and other areas with relatively short blocks and with traffic signals at every intersection.
Woonerf/Shared Space	A shared space concept where the entire public right of way is available for all modes, often with no sidewalks, and with no lane striping, and little if any signage.	Access for motor vehicles is maintained, unlike a pedestrian zone, but motor vehicle speeds are constrained to 5 mph by design and the presence of other modes. Safety for all modes is improved.	Low volume residential streets where families can gather, and children are encouraged to play; also commercial areas with high pedestrian volumes, bicyclists and transit.
B. Road Design to Provide Bicycle Infrastructure			

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Bike Lanes	A painted lane for the exclusive use of bicyclists; it is one-way and is 5 feet minimum in width. They can be retrofitted onto an existing street by either a) narrowing existing wide travel lanes; b) removing a parking lane; c) removing a travel lane, or d) widening the roadway. A common method to retrofit bike lanes is described below.	Provides cyclists with their own travel lane so that they can safely pass and be passed by motor vehicles.	Roadways with over 4000 vehicles per day (if less than 4000 vehicles per day see Bicycle Boulevards above).
Road Diet (aka Lane Reduction)	One to two travel lanes are replaced with a bike lane in each direction, and in most cases by also adding left-turn lanes at intersections or a center two-way left-turn lane; variations include widening sidewalks, and replacing parallel parking with angled or perpendicular parking.	Improves traffic safety for all modes by: a) eliminating the double-threat to pedestrians posed by the two or more travel lanes in each direction; b) providing bike lanes for cyclists; c) providing a left-turn pocket for motorists, reducing rear-end Crashes and improving visibility to oncoming traffic.	Classic application is a four-lane undivided roadway with less than 15,000 to 17,000 ADT though conversions of four-lane streets may work up to 23,000 ADT. Also applies to three-lane roadways and to 5 or 6-lane undivided roadways
Buffer adjacent to bike lanes	A three to five-foot buffer area is provided on one or both sides of the bike lane.	Right-side buffer (between bike lane and on-street parking): Removes cyclists from the door zone; Left-side (between bike lane and adjacent travel lane): provides greater separation from passing motor vehicle traffic.	This measure is particularly beneficial in the following conditions: Right-side: on streets with parallel on-street parking particularly in cities with a Crash history of dooring; Left-side: on streets with traffic with prevailing speeds of 40 mph and higher.
Cycle Tracks	A bikeway within the roadway right of way that is separated from both traffic lanes and the sidewalks by either a parking lane, street furniture, curbs or other physical means.	Reduces sidewalk riding, provides greater separation between motorists and cyclists.	Urban settings with parallel sidewalks and heavy traffic.
Left-Turn Staging Box	This roadway treatment provides bicyclists with a means of safely making a left turn at a multi-lane signalized intersections from a bike lane or cycle track on the far-right side of the roadway.	Bicyclists are protected from the flow of traffic while waiting to turn.	Appropriate for multilane roadways. Can also be mirrored for right-turns from a one-way street with a left-side bikeway.

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
C Other Traffic Control Devices			
Except Bicycles placard	A Regulatory sign placard for use with other regulatory signs.	Increases or maintains the access and circulation capabilities of bicyclists.	Used at locations where the restriction in question does not apply to bicyclists, such as No Left Turn or Do Not Enter.
Sharrows	A pavement legend that indicates the location within the travel lane where bicyclists are expected to occupy.	The sharrow encourages cyclists to ride outside of the door zone and studies have shown that sharrows reduce the incidence of cyclists riding on the sidewalk and wrong-way riding.	Two or more lane city streets where the right-most lane is too narrow for a motor vehicle to safely pass a cyclist within the travel lane.
Bike Lanes May Use Full Lane sign (MUTCD R4-11)	Regulatory Sign	Informs motorists and cyclists that cyclists may be travelling in the center of a narrow lane.	Two or more lane city streets where the right-most lane is too narrow for a motor vehicle to safely pass a cyclist within the travel lane.
Share the Road sign (MUTCD W-11/ W16-1p)	Warning sign and placard	Informs motorists to expect cyclists on the roadway.	Two-lane roads particularly in rural areas where shoulders are less than four feet.
Bike Directional Signs (MUTCD D1 series or similar)	Informational signs indicating place names and arrows, with distances as a suggested option (D1-2C)	Informs bicyclists of the most common destination served by the bike route in question.	Particularly useful to direct cyclists to a facility such as a bike bridge or to use a street to access a major destination that might not otherwise be readily apparent.
D. New infrastructure to improve bicycle connectivity			
Bike Path	A paved pathway for the exclusive use of non-motorized traffic within its own right of way;	Provides additional connectivity and route options that otherwise would not be available to bicyclists.	Wherever a continuous right of way exists, typically found along active or abandoned railroad ROW, shorelines, creeks, and river levees.
Pathway connections	Short pathway segments for non-motorized traffic, for example, that join the ends of two cul-de-sacs or provide other connectivity not provided by road network.	Provides short-cuts for bicyclists that reduce their travel distance and travel time.	Varies by community; suggested at the end of every newly constructed cul-de-sac.

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Bicycle Overpass/ Underpass	A bicycle overpass or underpass is a bridge or tunnel built for the exclusive use of non-motorized traffic and is typically built where at-grade crossings cannot be provided such as to cross freeways, rivers, creeks and railroad tracks. They can also be built to cross major arterials where, for example, a bike path must cross a major roadway.	A bike bridge / tunnel complements a local roadway system that is discontinuous due to man-made or natural barriers. They reduce the distance traveled by cyclists, and provide a safer conflict-free crossing, particularly if it is an alternative to a freeway interchange.	Grade separation via this measure is most feasible and appropriate when it would provide direct access to major bicyclist destinations such as a school or college, employment site, major transit station or would reduce the travel distance by one mile or more.
NODES / INTERSECTIONS			
E. Intersection Design for Motor Vehicles			
Reduced Curb Radii	The radius of a curb is reduced to require motorists to make the turn at slower speeds and to make a tighter turn.	Shorter curb radii reduce the speed of turning traffic thereby enabling a more comfortable weave between through cyclists and right-turning motorists.	This measure is suitable for downtown settings, at all cross streets with minor streets, all residential streets and all roadways that are not designated truck routes.
Remove/Control Free Right-Turn Lanes	Where a separate right-turn lane continues as its own lane after the turn, it may be redesigned to eliminate the free turn. A short-term solution is to control the turning movement with a stop sign or signal control and to redesign the island as discussed below.	Improves bicyclist safety since this design forces through cyclists on the cross street to end up in between two lanes of through motor vehicle traffic.	All locations where there are free right-turn lanes except those leading onto freeway on-ramps.
Remove/Redesign Right-Turn Slip-Lane Design	Right-turn slip lanes (aka channelized right-turn lanes) are separated from the rest of the travel lanes by a pork chop-shaped raised island which typically is designed to facilitate fast right turns, and right-turning vehicles are often not subject to the traffic signal or stop sign.	Improves bicyclist safety by slowing right-turning motorists and facilitates the weave between through bicyclists and right-turning motorists.	All locations with a channelized right-turn.
Remove Optional Right-Turn Lane in Combination with a Right-Turn Only Lane	At locations where there is an optional right-turn lane in combination with a right-turn only lane, convert the optional right-turn lane to a through-only lane.	Improves bicyclist safety since cyclists have no way of knowing how to correctly position themselves in the optional (through /right turn) lane.	All locations where there is an optional right-turn lane in combination with a right-turn only lane per HDM 403.6(1) (except on freeways).

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Redesign Ramp Termini	Redesign high speed free flow freeway ramps to intersection local streets as standard intersections with signal control.	Improves bicyclist and pedestrian safety on intersections of local streets with freeway ramps.	All freeway interchanges with high speed ramps
F. Intersection Design Treatments - Bicycle-Specific			
Bicycle Signal Detection and Pavement Marking	Provide signal detectors that also detect bicyclists in the rightmost through lane and in left-turn lanes with left-turn phasing. Provide pavement marking to indicate to cyclists where to position themselves in order to activate the detector.	Enables cyclists to be detected when motor vehicles are not present to trigger the needed signal phase. Improves bicyclists' safety.	Per CA MUTCD 4D.105 and CVC 21450.5, all new and modified traffic detection installations must detect bicyclists; All other traffic-actuated signals may be retrofitted to detect bicyclists as soon as feasible.
Bicycle Signal Timing	Provides signal timing to account for the speed of cyclists to cross an intersection.	Improves bicyclists' safety by reducing the probability of a bicyclist being in an intersection when the phase terminates and being hit by traffic that receives the next green phase.	Signal timing that accounts for cyclists is particularly important for cyclists on a minor street approach to a major arterial which crosses a greater distance due to the width of the arterial, hence requiring a longer time interval.
Bicycle Signal Heads	A traffic signal indication in the shape of a bicycle, with full red, yellow green capability.	Improves bicyclist safety by providing a bicycle - only phase, where appropriate, given the geometry and phasing of the particular intersection.	Where intersection geometry is such that a bicycle-only phase is provided and/or bicycle signal heads would improve safety at the intersection. See also CA MUTCD for warrants for bicycle signal heads.
Widen Bike Lane at Intersection Approach	Within the last 200 feet of an intersection, widen the bike lane and narrow the travel; for example from 5 foot bike lane and 12 feet travel lane would become a 7 foot bike lane and 10 foot travel lane.	Improves cyclist safety by encouraging right-turning motorists to enter the bike lane to turn right, (as required by the CVC), which reduces the chance of a right-turn hook Crash in which a through cyclist remains to the right of a right-turning motorist.	On roads with bike lanes approaching an intersection without a right-turn only lane and there is noncompliance with right-turning vehicles merging into the bike lane as required by the CVC and UVC.

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Bike Lane inside Right-Turn Only Lane ("Combined Bicycle/Right-Turn Lane")	Provide a bike lane line inside and on the left side of a right-turn only lane.	Encourages cyclists to ride on the left side of the right-turn only lane thus reducing the chance of a right hook Crash, where a cyclist remains to the right of a right-turning motorist.	On roads with bike lanes approaching an intersection with a right-turn only lane and there is not enough roadway width to provide a bike lane to the left of the right-turn lane.
Bike Boxes	Area between an Advance Stop Line and a marked crosswalk which is designates as the queue space for cyclists to wait for a green light ahead of queued motor vehicle traffic; sometimes painted green.	Primary benefits are to reduce conflicts between bicyclists and right-turning traffic at the onset of the green signal phase, and to reduce vehicle and bicyclist encroachment in a crosswalk during a red signal phase.	Locations where there are at least three cyclists at the beginning of the green phase and moderate to high pedestrian volumes.
Marked Crosswalk with Distinct Marked Area for Bicyclists separate from Pedestrians	A marked crosswalk that has two distinct areas, one for pedestrians and one for bicyclists.	Reduces conflicts between bicyclists and pedestrians by indicating the part of the crosswalk intended for the two different modes.	At a typical intersection, cyclists would not be riding within the crosswalk, so this measure is intended for those few locations where the intersection design is such that bicyclists are tracked into a crosswalk such as at a midblock bike path crossing or possibly a cycle track.
Pedestrian Countdown Signal	Displays a "countdown" of the number of seconds remaining for the pedestrian crossing interval. In some jurisdictions the countdown includes the walk phase. In other jurisdictions, the countdown is only displayed during the flashing don't walk phase.	While designed for pedestrians, this measure also assists bicyclists in knowing how much time they have to left to cross the intersection.	The 2012 MUTCD requires all pedestrian signals to incorporated countdown signals within ten years
G. Geometric Countermeasures to Assist crossing a Major Street			
Median Refuge Island	A raised island placed in the center of a roadway, separating opposing lanes of traffic, with ramps for cyclists and ADA accessibility	This measure allows bicyclists to cross one direction of traffic at a time; it allows drivers to see bicyclists crossing from the center more easily.	Suggested for multilane roads at uncontrolled crossings where an 8-foot (min.) wide by 15-foot (min.) long median can be provided.

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Staggered Refuge Pedestrian Island	This measure is similar to traditional median refuge islands; the only difference is that the crosswalk is staggered such that a pedestrian crosses one direction of traffic street and then must turn to their right facing oncoming to reach the second part of the crosswalk. This measure must be designed for accessibility by including rails and truncated domes to direct sight-impaired pedestrians along the path of travel.	Benefits of this measure include forcing the bicyclists and pedestrians to face the oncoming motorists, increasing their awareness of the impending conflict. Additionally, can improve motorists' visibility to those persons in the crosswalk.	Best used on multilane roads with obstructed pedestrian visibility or with off-set intersections
Raised Crosswalk/Speed Table	A crosswalk whose surface is elevated above the travel lanes at the same level as the approaching sidewalk. For bicyclists, a typical location would be at a bike path crossing, where the bike path elevation would remain constant while roadway cross traffic would experience a speed-hump type effect.	Attracts drivers' attention to the fact there will be non-motorized users crossing the roadway and slows traffic by providing a speed-hump effect for motorists approaching the crosswalk.	Appropriate for multi-lane roadways, roadways with lower speed limits that are not emergency routes, and roadways with high levels of pedestrian activity, such as near schools, shopping malls, etc.
H. Traffic Control Countermeasures to Assist Crossing a Major Street			
Traffic Signal or All-Way Stop Sign	Conventional traffic control devices with warrants for use based on the Manual on Uniform Control Devices (MUTCD)	Provides the gap needed in traffic flow so that cyclists can cross the street, reducing bicycle-vehicle conflicts and risk-taking by cyclists to	Must meet warrants based on traffic/ pedestrian / bicycle volumes, Crash history, and/ or other factors.
Modern Roundabout	A traffic circle combined with splitter island on all approaches and entering traffic must YIELD to traffic within the roundabout; typically designed for traffic speed within the roundabout of between 15 and 23 mph.	Slows traffic on cross street so that cyclists can more easily cross.	Roundabouts are a better alternative than an All-Way Stop signs when the side street volume is approximately 30 % of the total intersection traffic volume and total peak hour volume is less than 2300 vehicles per day.

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Pedestrian Hybrid Beacon	PHBs (Pedestrian Hybrid Beacon) are pedestrian-actuated signals that are a combination of a beacon flasher and a traffic control signal. When actuated, PHBs display a yellow (warning) indication followed by a solid red light. During pedestrian clearance, the driver sees a flashing red "wig-wag" pattern until the clearance interval has ended and the signal goes dark.	Reduces pedestrian-vehicle conflicts and slows traffic speeds.	Useful in areas where it is difficult for pedestrians to find gaps in automobile traffic to cross safely, but where normal signal warrants are not satisfied. Appropriate for multi-lane roadways.
Rectangular Rapid Flashing Beacon	A Rectangular Rapid Flashing Beacon (RRFB) is a pedestrian-actuated enhancement that improves safety at uncontrolled, marked crossings.	FHWA states that research indicates RRFBs can result in motorist yielding rates as high as 98 percent at marking crosswalks. Solar panels reduce energy costs associated with maintenance of the device.	Appropriate for multi-lane roadways.
In-Roadway Warning Lights	Both sides of a crosswalk are lined with pavement markers, often containing an amber LED strobe light. The lights may be push-button activated or activated with pedestrian detection.	This measure provides a dynamic visual cue of the uncontrolled crosswalk and is especially effective at night and in bad weather.	Locations not controlled by any measures listed above. Best in locations with low bicycle ridership on the cross street, as the raised markers may present difficulty to bicyclists. May not be appropriate in areas with heavy winter weather due to high maintenance costs. May not be appropriate for locations with bright sunlight.
Bicycle Crossing Sign (MUTCD W11-1) or Trail Crossing sign (MUTCD W11-15/W11-15p)	Warning Sign and placard.	Alerts motorists to a location where bicyclists or bicyclists and pedestrians will be crossing the roadway at an uncontrolled location.	Typical application is at bike path crossing of a roadway. (At a typical pedestrian crosswalk at an intersection, use the Pedestrian warning sign W11-2)

BICYCLING IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
In-Street Pedestrian Crossing Signs (MUTCD R1-6)	This measure involves posting this regulatory sign on road centerlines that read, "YIELD for Pedestrians in crosswalk". (Depending on state law, the word STOP may replace the word YIELD).	This measure improves the visibility of the crossing to motorists and has a positive impact on pedestrian safety at crosswalks.	Mid-block crosswalks, unsignalized intersections, low-speed areas, and two-lane roadways.
Advanced Yield Lines	Standard white stop or yield limit lines are placed 20-50 feet in advance of marked, uncontrolled crosswalks.	This measure increases the pedestrian's visibility to motorists, reduces the number of vehicles encroaching on the crosswalk, and improves general pedestrian conditions on multi-lane roadways. It is also an affordable option.	Useful in areas where pedestrian visibility is low and in areas with aggressive drivers, as advance limit lines will help prevent drivers from encroaching on the crosswalk. Addresses the multiple-threat Crash on multi-lane roads.
Transit			
Bike Racks on Buses	A rack on the front of the bus that typically holds two or three bicycles.	Increases the trip length distance that a person can make.	Appropriate for all buses; most urban transit agencies have already implemented this measure.
Bikes allowed inside buses when bike rack is full	A policy adopted by a transit agency that allows passengers to bring bicycles inside the bus when the bike rack is full and there is room inside.	Prevents cyclists from needless being left behind to wait for the next bus if the bike rack is full yet there is room inside the bus.	Appropriate for all buses; most urban transit agencies have already implemented this measure.
Folding bikes allowed inside buses	A policy adopted by a transit agency that treats a folding bicycle as luggage, thereby allowing it inside the bus at all times.	Removes cyclists' uncertainty as to whether they will be able to fit their bike either on the bike rack or inside the bus; thus, they can reliably plan on being able to catch their intended bus.	Appropriate for all buses; most urban transit agencies have already implemented this measure.

Appendix C: Resource List and References

RESOURCE LIST
A Guide for Reducing Collisions Involving Pedestrians (NCHRP Report 500) http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v10.pdf
Pedestrian and Bicycle Information Center http://www.walkinginfo.org/
National Center for Safe Routes to School http://www.saferoutesinfo.org/
Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations (HRT-04-100) http://www.thrc.gov/safety/pubs/04100/index.htm
How to Develop a Pedestrian Safety Action Plan (FHWA-SA-05-12) http://www.walkinginfo.org/pp/howtoguide2006.pdf
Improving Pedestrian Safety at Unsignalized Crossings (NCHRP Report 562) http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_562.pdf
Road Safety Audits: Case Studies (FHWA-SA-06-17) http://safety.fhwa.dot.gov/rsa/rsa_cstudies.htm
Pedestrian Road Safety Audit Guidelines and Prompt Lists http://drusilla.hsrc.unc.edu/cms/downloads/PedRSA.reduced.pdf
PEDSAFE: The Pedestrian Safety Guide and Countermeasure Selection System (FHWA-SA-04-003) http://www.walkinginfo.org/pedsafe/
Pedestrian and Bicycle Crash Analysis Tool (PBCAT) http://www.bicyclinginfo.org/bc/pbcat.cfm
FHWA, A Resident's Guide for Creating Safe and Walkable Communities http://safety.fhwa.dot.gov/ped_bicycle/ped/ped_walkguide/index.htm
FHWA, Pedestrian Safety Guide for Transit Agencies (FHWA-SA-07-017) http://safety.fhwa.dot.gov/ped_bicycle/ped/ped_transguide/
FHWA Pedestrian Safety Training Courses:
Developing a pedestrian safety action plan (two-day course) *next California course:* http://www.google.com/calendar/embed?src=lssandt@email.unc.edu
Designing for pedestrian safety (two-day course) *next California course:* http://www.google.com/calendar/embed?src=lssandt@email.unc.edu
Planning and designing for pedestrian safety (three-day course) *next California course:* http://www.google.com/calendar/embed?src=lssandt@email.unc.edu
Adapted from FHWA Pedestrian Road Safety Audit Guidelines and Prompt Lists

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CROW, Design Manual for Bicycle Traffic, The Netherlands
http://www.crow.nl/nl/Publicaties/publicatiedetail?code=REC25
From the CROW English website, http://www.crow.nl/English
CROW is The Netherlands technology platform for transport, infrastructure and public space. It is a not-for-profit organization in which the government and businesses work together in pursuit of their common interests through the design, construction and management of roads and other traffic and transport facilities. Active in research and in issuing regulations, CROW focuses on distributing knowledge products to all target groups.

Transport for London, London Cycling Design Standards, UK
http://www.tfl.gov.uk/businessandpartners/publications/2766.aspx

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Appendix D: Street Connectivity

Importance of Street Connectivity

Providing direct paths for bicyclists and pedestrians via well-connected street networks is important for encouraging bicycling and walking by helping people overcome real and perceived senses of distance.

Street connectivity is also associated with public health benefits. The SMARTRAQ Project analysis in Atlanta, Georgia, found that doubling the current regional average intersection density, from 8.3 to 16.6 intersections per square kilometer was associated with a reduction in average per capita vehicle mileage of about 1.6 percent. Furthermore, the Frank et al. (2006) study of King County, Washington, found that per-household VMT declines with increased street connectivity, all else held constant.

Policies for Street Connectivity

A network of safe, direct, and comfortable routes and facilities: A 2004 PAS report suggests that pedestrian (and bicycle) path connections to be every 300 to 500 feet; for motor vehicles, they suggest 500 to 1,000 feet.[1] [2] For new development, such standards can be implemented through ordinances, like those of the regional government of Portland Oregon, Metro, which requires street connectivity in its Regional Transportation Plan and in the development codes and design standards of its constituent local governments.[3]

Measuring Connectivity

The following discussion of measuring street connectivity is provided as a resource and not officially a part of regular BSA processes. However, individuals are certainly encouraged to make such calculations. Jennifer Dill (2004) presents the following measures of street connectivity:

- Intersection density
- Street density
- Average block length
- Link/node ratio
- Connected node ratio = intersections/ (intersections + cul-de-sacs)
- Alpha index = number of actual circuits/ maximum number of circuits
- Gamma index = number of links in the network/ maximum possible number of links between nodes
- Effective walking area = number of parcels within a one-quarter mile walking distance of a point/ total number of parcels within a one-quarter mile radius of that point
- Route directness = route distance/ straight-line distance for two selected points

Dill suggests that route directness (RD) is perhaps the best connectivity measure to reflect minimizing trip distances, but may be difficult to use in research and policy. However, it may be applied in practice by randomly selecting origin-destination pairs and calculating a sample for the subject area.

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[1] Susan Handy, Robert G. Paterson, and Kent Butler, 2004, *Planning for Street Connectivity: Getting from Here to There,* PAS Report #515 (Chicago: APA Planners Press).

[2] American Association of State Highway and Transportation Officials (AASHTO), *Guide for the Design of Pedestrian Facilities* (Washington, D.C., AASHTO, 2004); *AASHTO Guide for the Development of Bicycle Facilities* (Washington, D.C., AASHTO, 1999; updated 2009); Institute of Traffic Engineers (ITE), Traffic Calming Guidelines and ITE *Context-Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities* (Washington, D.C.: ITE, 2006).

[3] The regional government of Portland Oregon, Metro, requires street connectivity in its Regional Transportation Plan and in the development codes and design standards of its constituent local governments as follows: local and arterial streets be spaced no more than 530 feet apart (except where barriers exist), bicycle and pedestrian connections must be made (via pathways or on road right of ways) every 330 feet, Cul de sacs (or dead-end streets) are discouraged and can be no longer than 200 feet, and have no more than 25 dwelling units.

Berkeley Safe Transportation Research and Education Center

SAFE TRANSPORTATION RESEARCH AND EDUCATION CENTER

(SAFETREC)

UNIVERSITY OF CALIFORNIA, BERKELEY

About the Safe Transportation Research and Education Center (SafeTREC)

Founded in 2000, SafeTREC is part of the University of California, Berkeley, affiliated with the School of Public Health and the Institute of Transportation Studies, with additional partnerships with the Department of City and Regional Planning, Public Policy, and Transportation Engineering.

Our Mission

SafeTREC's mission is to inform decision-making and empower communities to improve roadway safety for all.

Our Vision

We envision a world with zero roadway fatalities or serious injuries and a culture that prioritizes safe mobility.

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Title	Item type	Commission action
Santa Cruz Ave and Sand Hill Road Corridor Safety Project – Preliminary Findings	Informational	Feedback
Middlefield Road safe streets project	Regular	Recommendation
PW Departmental Projects Report Out	Informational	No action

Upcoming meeting dates and details:

- October 14, 2026 – at BHCC, 8pm hard stop
- No November Meeting
- December 9, 2026

Public Works Update

Construction News

Every week, staff publish a Construction News Update that provides a summary of the City's construction activities. The document provides the location of the project, the activities for the week, and the contact information.
LINK -- https://www.menlopark.gov/Government/Departments/Public-Works/Engineering-Division/Construction-news

Budget and Capital Improvement Plan– As part of the annual budget process, staff presented proposals for both the operating and capital budgets. As many of you know, the City is experiencing fiscal challenges related to Vehicle License Fee (VLF) backfill funding, as well as broader uncertainty. We proposed reductions to address the shortfalls, which included eliminating the consultant work on the Safe Routes to School program. On the capital side, we proposed canceling and delaying projects to address the funding gaps, particularly projects funded through the General Fund and Transportation Impact Fees. These proposed operating and capital reductions were incorporated into the adopted budget. Staff also informed the City Council that the City is unlikely to receive future grant funding for the City's shuttle program, which is also partially supported through Measure A funds. Below are the links to the City Council budget items for your reference.

While we presented a balanced budget for fiscal year 2026-27, we learned earlier this month that the City will be required to return $2.4 million of fiscal year 2025-26 VLF funding to the State. As a result, the City faced a $5.4 million VLF shortfall in fiscal year 2025-26 and may be facing a higher than projected VLF shortfall in fiscal year 2026-27. The San Mateo County Board of Supervisors held a press conference last week to address this issue and its potential impact on cities. For more information, see the County's statement here: https://www.smcgov.org/ceo/news/san-mateo-county-cities-warn-state-funding-shortfall-could-force-deep-cuts-local-services. If the City is not made whole, additional and potentially deeper reductions will be necessary, which could significantly affect our ability to deliver planned projects and maintain existing services. The City is actively collaborating with the County to advocate for a permanent legislative solution that resolves this issue and protects funding for local services.

1. 4/14/26 - L2-Update on the City's fiscal year 2025-26 Capital Improvement Plan
2. 5/12/26 - G2-Provide direction on the five-year capital improvement plan (watch video)
    a. Presentation
    https://docaccess.com/docviewer.html?url_hash=6fb649ad5692aa19a2ce45fee491bb44&domain=menlopark.gov
    b. Staff report
    https://docaccess.com/docviewer.html?url_hash=b5d0ee799075169eced9dc91facd04b3&domain=menlopark.gov
3. 5/28/26 – Public Budget Workshop
    https://www.menlopark.gov/Government/Departments/Administrative-Services/Finance/City-budget
4. 6/9/26 - G2-Hold public hearing on the proposed fiscal year 2026-27 budget and capital improvement plan; hold public hearing on vacancies, recruitment and retention; and consider and adopt a resolution to amend the fiscal year 2025-26 budget
5. 6/23/26 - K1-Consider and adopt resolutions for fiscal year 2026-27: adopting budget and capital improvement plan; establishing appropriations limit; amending salary schedule effective July 1, 2026

Upcoming City Council Agenda Topics: September 2026 – Copied from:
https://docaccess.com/docviewer.html?url_hash=eab1f9b70446a17754a39caec5ff52f5&domain=menlopark.gov

Tentative City Council Agenda

#	*Title*	*Department*	*Item type*	*City Council action*
1	Consider and adopt a resolution updating the User Fee Cost Recovery Policy	ASD	Regular	Adopt resolution
2	Update on fiscal year 2025-26 year-end fiscal status	ASD	Informational	No action
3	Consider and adopt a resolution to approve a vesting tentative subdivision map to subdivide a property into 15 condominium parcels and one common area parcel in the SP-ECR/D (El Camino Real/Downtown Specific Plan) zoning district, at 800 Oak Grove Ave.	CDD	Public Hearing	Approve
4	Financial review and summary of proposals for downtown development on Parking Plazas 1, 2 and 3	CDD	Study Session	Direction to staff
5	Provide direction on Parkline Phase 2	CDD	Study Session	Direction to staff
6	Approve advisory body annual work plans	CMO	Regular	Approve
7	Consider and adopt a resolution approving the Local Hazard Mitigation Plan	CMO	Regular	Adopt resolution
8	Consider and adopt a resolution authorizing the destruction of obsolete records	CMO	Consent	Adopt resolution
9	Consider and adopt a resolution updating the City's conflict of interest code	CMO	Consent	Adopt resolution
10	Minutes: 8/19 and 25	CMO	Consent	Approve
11	Minutes: 8/5 and 11	CMO	Consent	Approve
12	Proclamation: Constitution Week	CMO	Proclamation	No action
13	Proclamation: National Preparedness Month	CMO	Proclamation	No action
14	Proclamation: National Recovery Month	CMO	Proclamation	No action
15	Proclamation: National Service Dog Month	CMO	Proclamation	No action
16	Proclamation: Suicide Prevention Month	CMO	Proclamation	No action
17	Authorize the city manager to purchase library books and materials from current vendor Ingram Content group in total amount not to exceed $115,000 during fiscal year 2026-27	LCS	Consent	Contract award or amend
18	Authorize the city manager to execute a sole source agreement with Axon Enterprise, Inc. for an integrated public safety technology platform	PD	Consent	Contract award or amend
19	Authorize the city manager to execute a license agreement with West Bay Sanitary District for extended sewer lines at Bedwell Bayfront Park	PW	Consent	Contract award or amend
20	Downtown Streetscape Improvements	PW	Informational	No action
21	Reimagine Dumbarton - SamTrans Presentation	PW	Presentation	No action
22	Review the Coleman Ave Pilot Project, conclude the Pilot, and make the Pilot permanent	PW	Regular	Adopt resolution
23	Update on Downtown Parking Management Study	PW	Informational	No action

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