345 MIDDLEFIELD REIMAGINED DESIGN PACKAGE

345 MIDDLEFIELD ROAD, MENLO PARK, CA, 94025

PLANNING APPLICATION

01.30.2026

PRESIDIO BAY VENTURES

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WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

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PROJECT NARRATIVE

345 Middlefield Reimagined envisions the transformation of a long-underutilized governmental campus into a vibrant, mixed-use district that reflects Menlo Park's values of innovation, inclusivity, and sustainability. The project will deliver a diverse residential community, adaptable workspaces, neighborhood-serving retail and amenities, an on-site childcare center, and a welcoming public realm anchored by a connected network of parks, plazas, and a central event lawn. At its core, the vision is about more than new buildings, it is about creating a complete neighborhood where people can live, work, learn, gather, and thrive.

The Project proposes the transformation of an existing 412,663 square foot regional governmental headquarters into a complete and dynamic neighborhood that delivers new housing, neighborhood- serving retail and amenities, on-site childcare, publicly accessible parks and open space, and high-performing and adaptable office space, supported by significant public-realm, landscape, transportation, and sustainability improvements. The 17.747-acre site, located at 345 Middlefield Road, represents one of the most significant redevelopment opportunities in Menlo Park and offers a rare opportunity to replace static vacancy with lasting community value while preserving and thoughtfully integrating the site's existing natural landscape.

The current program includes:
- 670 Residential Units (with a diversity of unit types; on-site amenities; 15% inclusionary)
- Jobs/Housing Balance: +18 Housing Units
- Approximately 740,000 sq. ft. Commercial Office (approximately 320,000 sq. ft. net new)
- Approximately 40,000 sq. ft. Retail/Amenity
- Approximately 15,000 sq. ft. On-Site Childcare Center
- Approximately 3.0 acres of Publicly Accessible Open Space (including a 1.5-acre central Redwood Lawn)
- Approximately 2,639 Covered Parking Stalls, with a shared parking and Transportation Demand Management strategy to reduce vehicle trips and support alternative modes

Robust on-site bicycle facilities, including secure long-term residential and employee bike parking, short-term visitor bike parking, and associated end-of-trip facilities (such as showers and lockers) consistent with Menlo Park's bicycle parking and TDM guidelines

PLANNING CODE INFORMATION

LOCATION: 345 MIDDLEFIELD ROAD, MENLO PARK, CA, 94025
PARCEL NUMBER: 062-390-700, 062-421-070

GROSS LOT AREA: 17.75 ACRES

CURRENT ZONING: (P-F) PUBLIC FACILITY
PROPOSED ZONING: NEW ZONING DESIGNATION

CURRENT GENERAL PLAN DESIGNATION: PUBLIC/QUASI-PUBLIC
PROPOSED GENERAL PLAN DESIGNATION: NEW GENERAL PLAN DESIGNATION

EXISTING USE: OFFICE, LABORATORY, ASSEMBLY, DINING, EDUCATION, STORAGE AND PARKING

PROPOSED USE: MULTI-FAMILY RESIDENTIAL, RETAIL, COMMERCIAL OFFICE, CHILDCARE AND PARKING

BUILDING CONSTRUCTION TYPE

BUILDING A: TYPE II + TYPE IV
5 STORIES ABOVE + 1 BELOW

BUILDING B: TYPE I
6 STORIES ABOVE + 2 BELOW

BUILDING C: TYPE I + TYPE IIIA
7 STORIES ABOVE

BUILDING D: TYPE I + TYPE IIIA
7 STORIES ABOVE

BUILDING E: TYPE I
7 STORIES ABOVE

PAVILION: TYPE IV
2 STORIES

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345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
SHEET INDEX AND PROJECT DESCRIPTION

Scale
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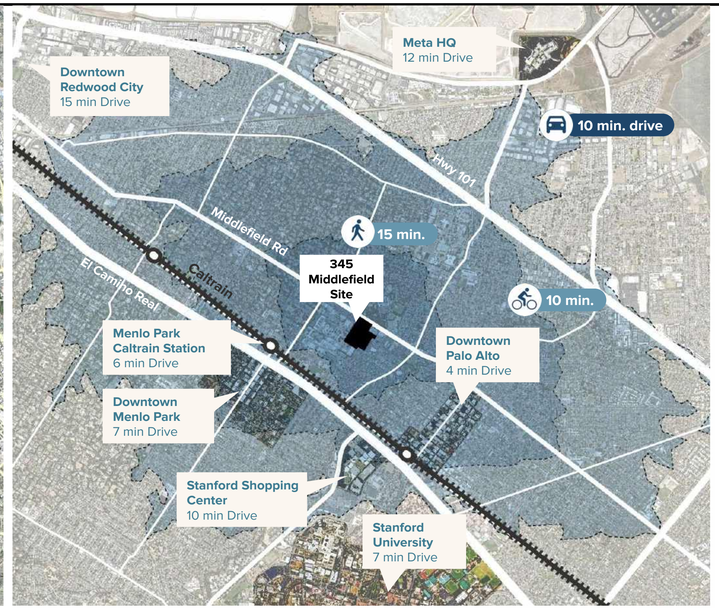
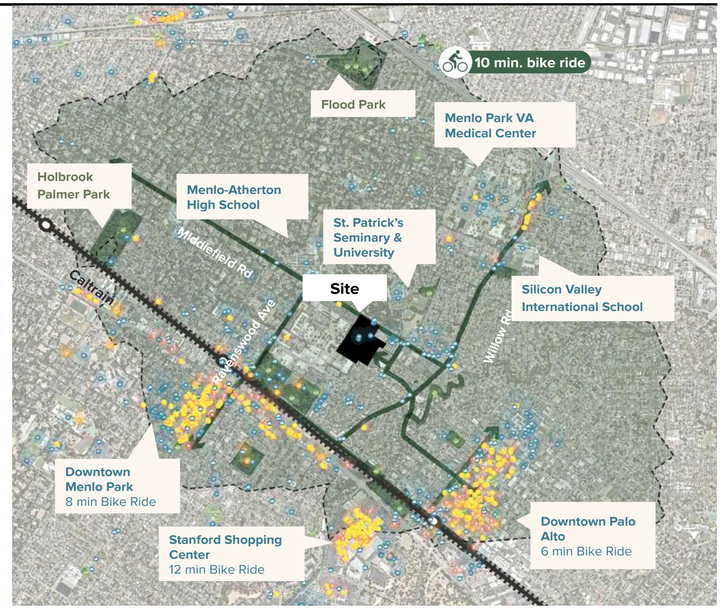




1 Site Context

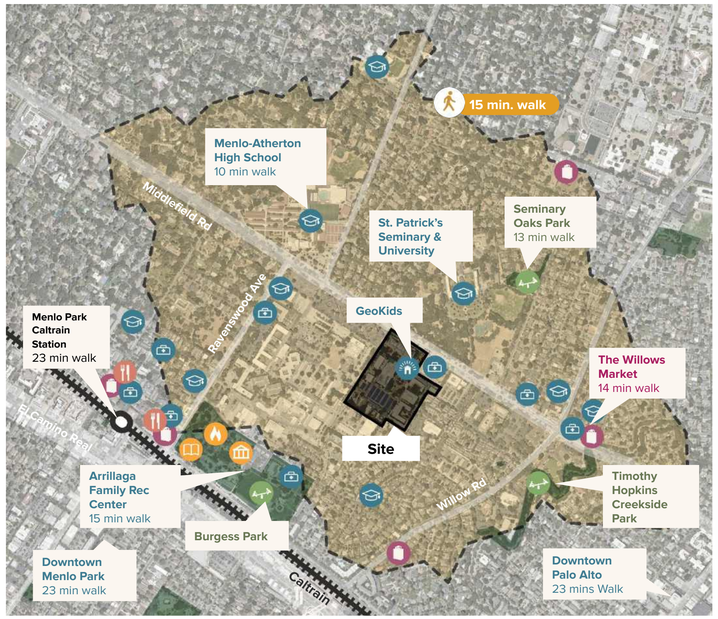
The site at 345 Middlefield in Menlo Park occupies a strategic location **at the heart of Silicon Valley**. Thirty miles south of San Francisco and twenty miles west of San Jose, 345 Middlefield is central to the greater Bay Area network, offering regional connectivity to many cities while remaining embedded at the center of the Peninsula's innovation ecosystem.

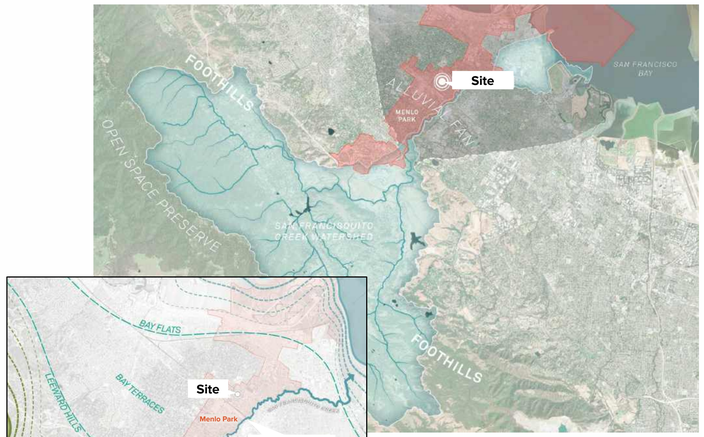
2 A well-connected location on the Peninsula

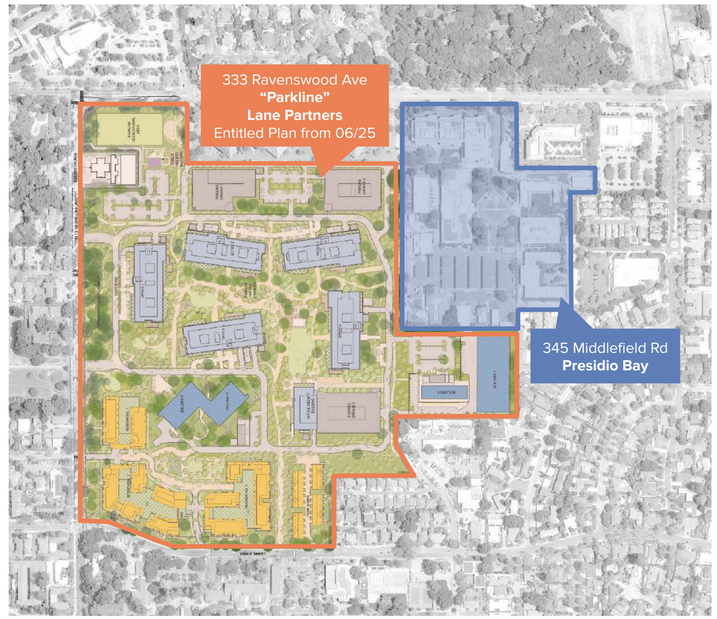
The site is easily accessible to major destinations including downtown Palo Alto, Menlo Park, Redwood City, the Stanford Campus, Stanford Shopping Center, and Meta's Headquarters.

3 A short bike ride away from a diverse set of amenities and destinations

The mixed-use downtowns of Menlo Park and Palo Alto are accessible within a 10-minute bike ride from the site, offering a variety of food and beverage, retail and employment opportunities at an arm's length.







4 Not yet a 15-minute neighborhood

The 15-minute walk catchment shows that most nearby amenities are civic - schools, municipal services, and a few parks.
There are opportunities to complete the neighborhood amenity ecosystem by providing access to food, retail, entertainment, and arts and culture.

5 An ecologically rich setting

Situated between the foothills of the Santa Cruz Mountains and the San Francisco Bay, Menlo Park has one of the most desirable, temperate climates in the world. The nearby San Francisquito Creek places the site at 345 Middlefield in a fertile zone created by the creek watershed, where oak woodlands and riparian forests thrive.

6 New developments happening nextdoor

Parkline, a mixed-use development proposed for the long-closed SRI campus nextdoor, presents a unique opportunity to coordinate masterplans, site connections, and other partnerships among the developments.

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SITE CONTEXT

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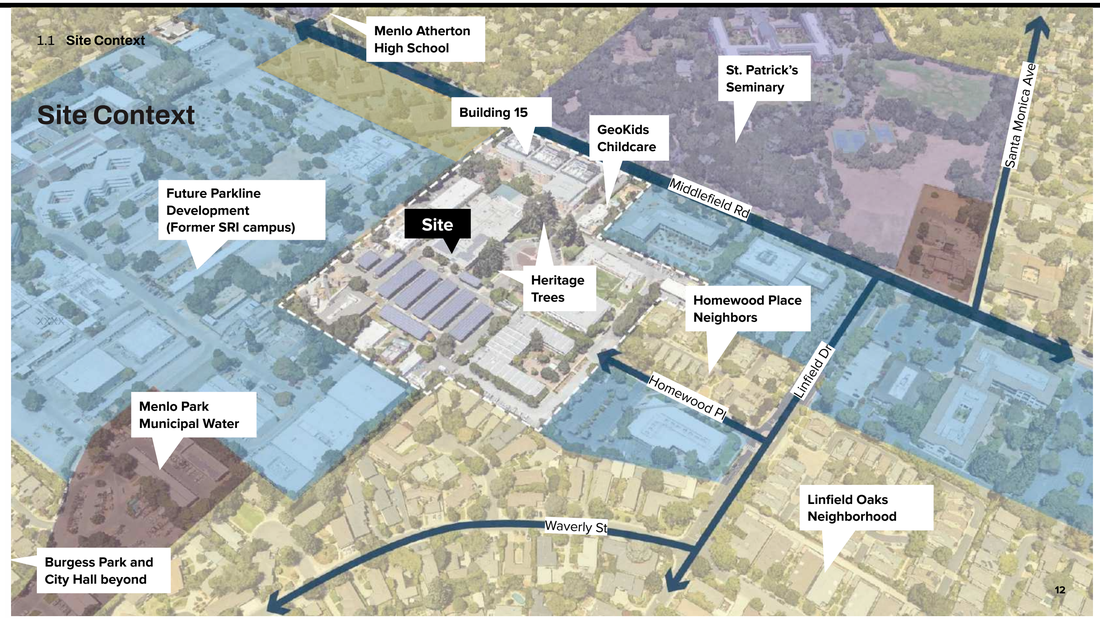
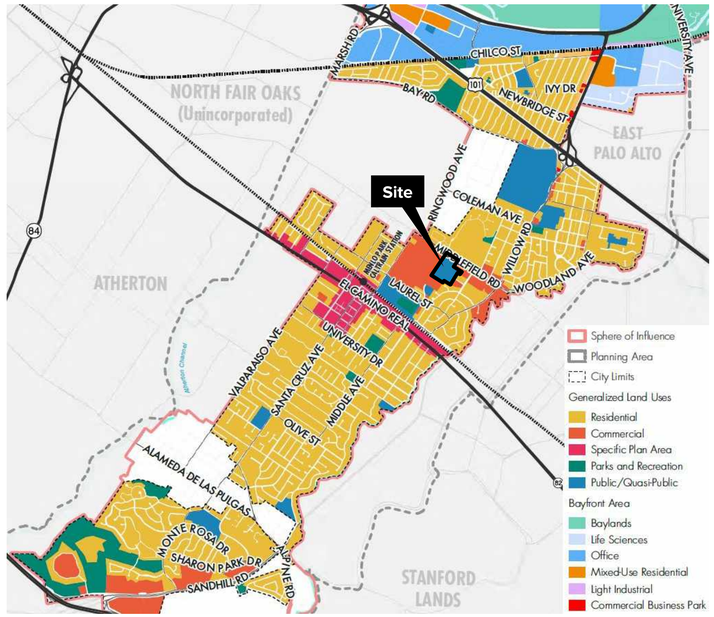


7 Heritage tree preservation

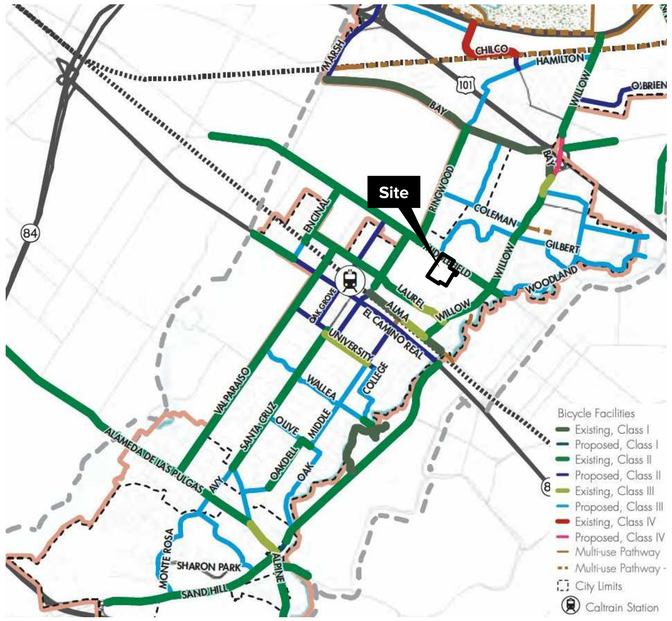
Redwood and oak heritage trees in excellent and good condition are a unique asset on-site. Preserving these trees is a primary site design driver and provides the opportunity to establish both a robust ecosystem and an identity for the project.

8 Site Context



9 City of Menlo Park Land Use

345 Middlefield is a 17.05 acre site. The current Land Use plan designation is considered Public/Quasi-Public, and zoned as Public Facility (PF).
The development will propose a new zoning designation as a Conditional Development Overlay district.



10 City of Menlo Park Bicycle Facilities

The site at 345 Middlefield is connected to a Class II bicycle facility along Middlefield Road as well as a Class III bicycle facility on Seminary Drive.

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SITE CONTEXT

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VEHICULAR PARKING DATA

Provided Parking Supply

Land Use	s.f. / units	Required Parking Ratio	Required Parking Spaces	Proposed Parking Ratio	Parking Ratio Spaces	Parking Provided
Office	740,000	Min: 2 per 1,000 s.f. Max: 3 per 1,000 s.f.	1,480 - 2,220	2.25 per 1,000 s.f.	1,665	1,665
Retail & Amenity	39,750	Min: 2.5 per 1,000 s.f. Max: 3.3 per 1,000 s.f.	100 - 132	3.3 per 1,000 s.f.	132	132
Residential	670	Min: 1 per unit Max: 1.5 per unit	670 - 1,005	1.2 per unit	804	804
Childcare Center	15,000	Min: 2 per 1,000 s.f. Max: 3.3 per 1,000 s.f.	26 - 43	2.5 per 1,000 s.f.	38	* 38
				Total:	2,639	2,639

* 10 short-term on street parking spaces are provided for parents

COMMERCIAL/NON-RESIDENTIAL PARKING

	Standard Parking Spaces					EV Charging Space (EVCS)*					Grand Total
	Standard	EV Capable * (Not Incl. EVCS)	Van Accessible	Accessible	Total	EVCS Standard	EVCS Van Accessible	EVCS Accessible	EVCS Ambulatory Accessible	Total	
Block B (Incl. Block A basement)	833	245	4	17	1099	112	2	4	4	122	1221
Block E	411	121	2	9	543	56	1	2	2	61	604
On-street	4	3	1	0	8	1	1	0	0	2	10
Total	1248	369	7	26	1650	169	4	6	6	185	1835

* EV Capable spaces (30%) & EV Charging spaces (33% of EV Capable) are provided per MPMC 12.18.060 (Table A5.106.5.3.1)

RESIDENTIAL PARKING (ASSIGNED)

	Unit	EV Ready (Level 2) Spaces*				EV Ready (Low Power Level 2) Spaces*				Grand Total
		EV Ready Standard	EV Ready Van Accessible	EV Ready Accessible	Total	EV Ready Standard	EV Ready Van Accessible	EV Ready Accessible	Total	
Block C	303	54	1	1	56	309	1	6	316	372
Block D	244	31	1	0	32	174	1	3	178	210
Block E	123	33	1	0	34	184	1	3	188	222
Total	670	118	3	1	122	667	3	12	682	804

* Level 2 EV Ready (15%) & Low Power Level 2 EV Ready (100%) spaces are provided per MPMC 12.18.040

BIKE PARKING

Land Use	s.f. / units	Long-Term	Short-Term	Total
Office *	740,000	118	30	148
Retail & Amenity **	39,750	2	6	8
Residential ***	670	1005	101	1106
Childcare Center **	15,000	1	2	3
Total		1126	139	1265

PROJECT DATA

PROPOSED PROJECT AREAS

SITE AREA	Square Feet	Acres
Total	773,073	17.75

SITE COVERAGE	Square Feet	Acres	Percentage
Landscaping	283,086	6.50	37%
Vehicular Paving	138,800	3.19	18%
Building	351,187	8.06	45%

SITE FAR	Gross Floor Area (SF)	FAR
Residential	758,482	0.98
Office	740,000	0.96
Retail/Amenity	39,750	0.05
Parking	-	-
Total	**1,538,232**	

RESIDENTIAL BUILDINGS		Building Coverage (SF)	Gross Floor Area (SF)	Units (DU)
New	Building C	88,226	344,565	303
	Building D	63,800	285,460	244
	Building E	57,621	128,457	123
	Residential Building Total	**209,647**	**758,482**	**670**

COMMERCIAL BUILDING AREAS		Building Coverage (SF)	Gross Floor Area (SF)
Existing	Building A (Building 15)	53,027	104,000
	Existing Office Building Total	**53,027**	**104,000**
New	Building A (Building 15)	52,400	156,000
	Building B1	27,600	160,000
	Building B2	27,600	160,000
	Building B3	27,600	160,000
	New Office Building Total	**135,200**	**636,000**
	Office Building Total	**135,200**	**740,000**

RETAIL/AMENITY BUILDING AREAS		Building Coverage (SF)	Gross Floor Area (SF)
	Building E	6,340	36,150
	Pavilion	-	3,600
	Retail/Amenity Building Total	**6,340**	**39,750**

PARKING BUILDING AREAS		Building Coverage (SF)	Gross Floor Area (SF)	
New	Building A (Building 15)	-	Excluded from FAR calc.	See Parking Data Tables for Parking Counts
	Building B1	-		
	Building B2	-		
	Building B3	-		
	Building E	-		
	Parking Building Total	**-**		
	All Buildings Total	**351,187**	**1,538,232**	

Notes:
1. Building Coverage area is calculated per city of Menlo Park Municipal Code 16.04.120
2. Parking Building Areas not included in FAR calculations per Menlo Park Definitions.

EXISTING SITE AREAS

SITE AREA	Square Feet	Acres	
Total	773,073	17.75	

SITE COVERAGE	Square Feet	Acres	Percentage
Landscaping	281,533	6.46	36%
Vehicular Paving	271,726	6.24	35%
Building	219,814	5.05	28%

SITE FAR	Floor Area (SF)	FAR
Residential	-	-
Commercial	412,663	0.53

JOBS TO HOUSING BALANCE

JOBS/HOUSING BALANCE ON SITE

Total Office (SF)	Existing Office (SF)	Net New Office (SF)	# Jobs Created (3.0 per 1000sf)	Employed Resident Per Houshold	# New Housing Units Required For Office
740,000	412,663	327,337	983	1.53	642
Total Retail	**Existing Retail**	**New Net Retail**	**# Jobs Created (1.5 per 1000sf)**	**Employed Resident Per Houshold**	**# New Housing Units Required For Retail**
7,278	-	7,278	11	1.53	8
Total # of New Housing Units Required on Site					650
Total # of New Housing Units Provided on Site					670
Jobs/Housing Balance on Site					**20**

TREE DISPOSITION AND REPLACEMENT COUNTS

Tree Type	Existing	Existing To Be Disposed	New
Heritage Tree	124	78	
Non-Heritage Tree	81	81	
New Tree Replacement	-	-	78
Total	**205**	**159**	**78**
Total Trees Proposed			**124**

Note: See Tree Disposition and Replacement sheets for additional information.

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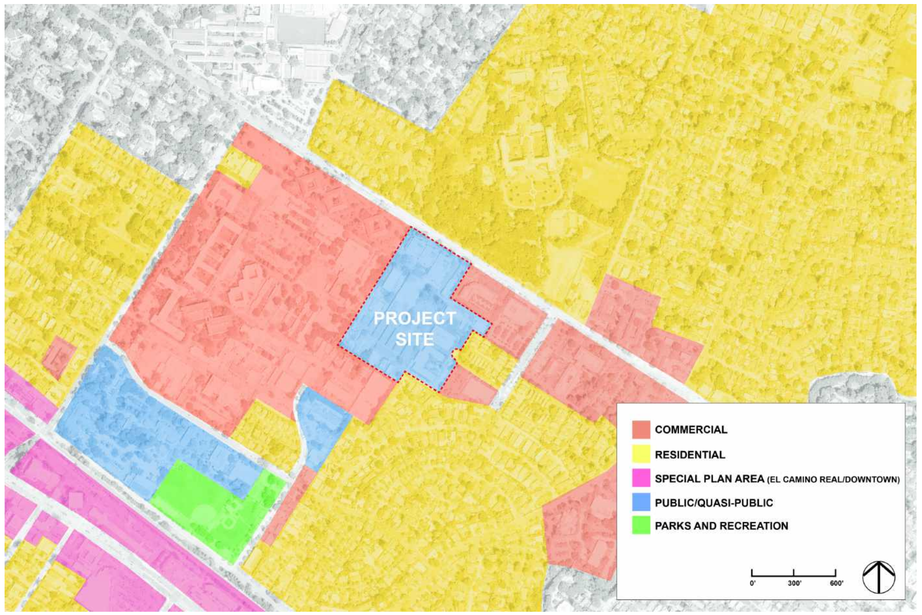
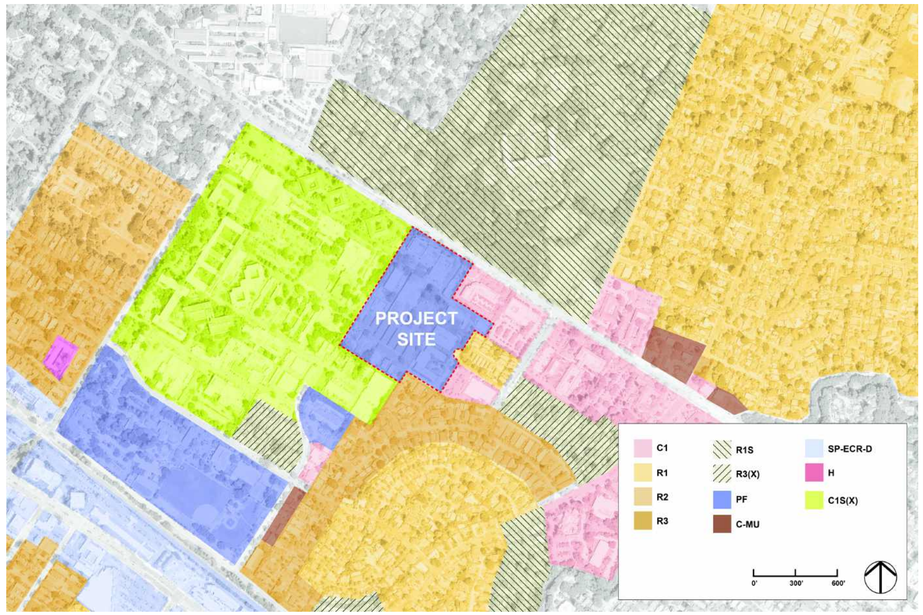
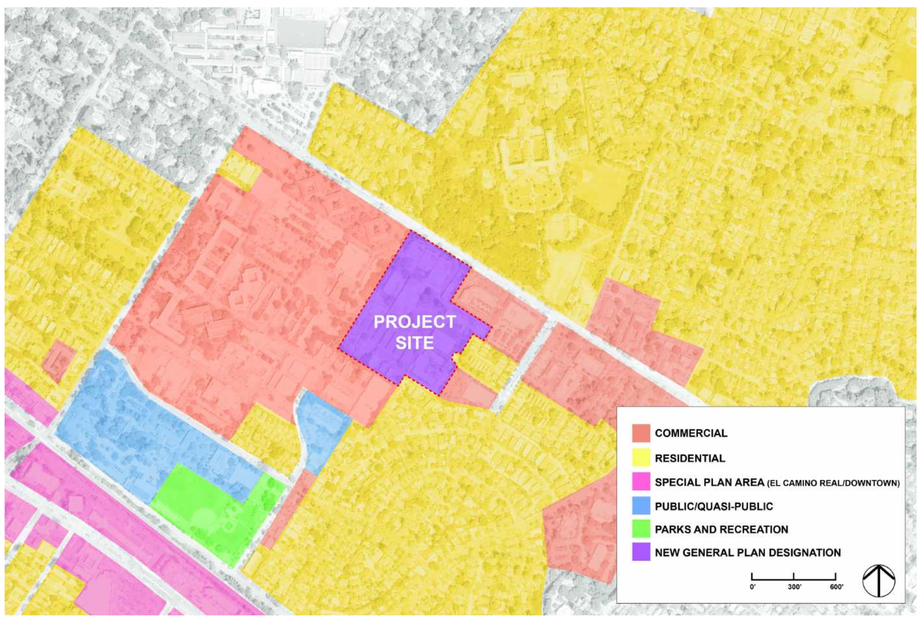


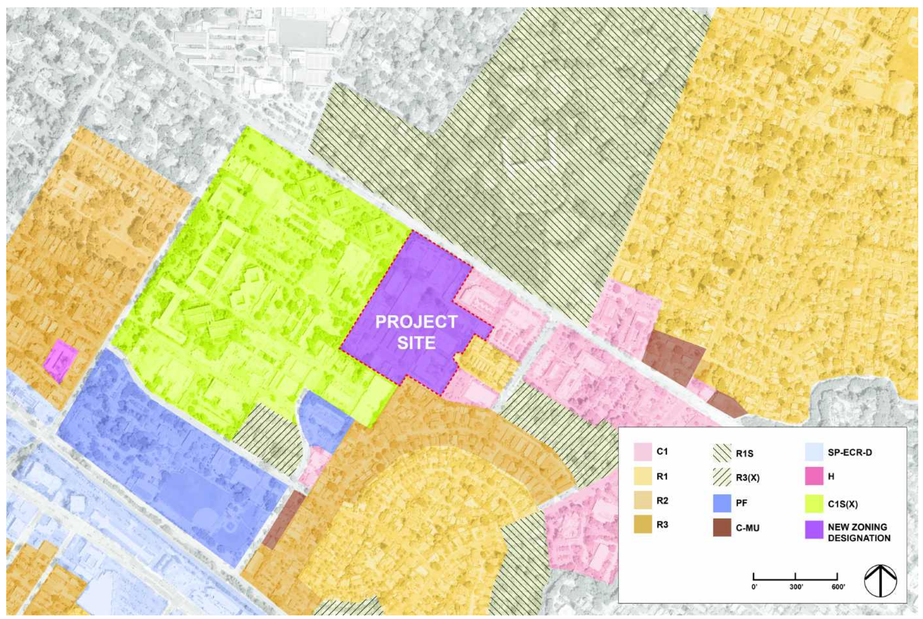
EXISTING GENERAL PLAN DESIGNATION



EXISTING ZONING DESIGNATION



PROPOSED GENERAL PLAN DESIGNATION



PROPOSED ZONING PLAN DESIGNATION

GENERAL NOTES

1. EXISTING AND PROPOSED GENERAL PLAN LAND USE AND ZONING DESIGNATIONS ILLUSTRATED ON THIS SHEET ARE PROVIDED FOR PLANNING AND ENTITLEMENT PURPOSES ONLY AND REFLECT THE APPLICANT'S CURRENT UNDERSTANDING OF APPLICABLE CITY OF MENLO PARK POLICIES AND STANDARDS. FINAL DESIGNATIONS ARE SUBJECT TO REVIEW, REFINEMENT, AND ADOPTION BY THE CITY.
2. THE PROPOSED LAND USE AND ZONING FRAMEWORK FOR THE PROJECT IS ANTICIPATED TO BE IMPLEMENTED THROUGH A DEVELOPMENT AGREEMENT AND ASSOCIATED LEGISLATIVE ACTIONS (INCLUDING GENERAL PLAN AND ZONING MAP/TEXT AMENDMENTS AS DETERMINED BY THE CITY). THE CONTENT OF THESE ACTIONS WILL BE DEVELOPED IN COORDINATION WITH CITY STAFF, DECISION-MAKERS, AND THE COMMUNITY.
3. FUTURE DETAILED DEVELOPMENT REGULATIONS—INCLUDING BUT NOT LIMITED TO ALLOWABLE USES, DENSITY/INTENSITY RANGES, BUILDING HEIGHTS, SETBACKS, OPEN SPACE REQUIREMENTS, AND PARKING STANDARDS—WILL BE ESTABLISHED THROUGH THE DEVELOPMENT AGREEMENT, ZONING AMENDMENTS, AND IMPLEMENTING DOCUMENTS, AND WILL GOVERN FUTURE SITE DEVELOPMENT AT THE TIME OF BUILDING PERMIT ISSUANCE.

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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
GENERAL PLAN AND ZONING DESIGNATIONS

Scale

G1.05

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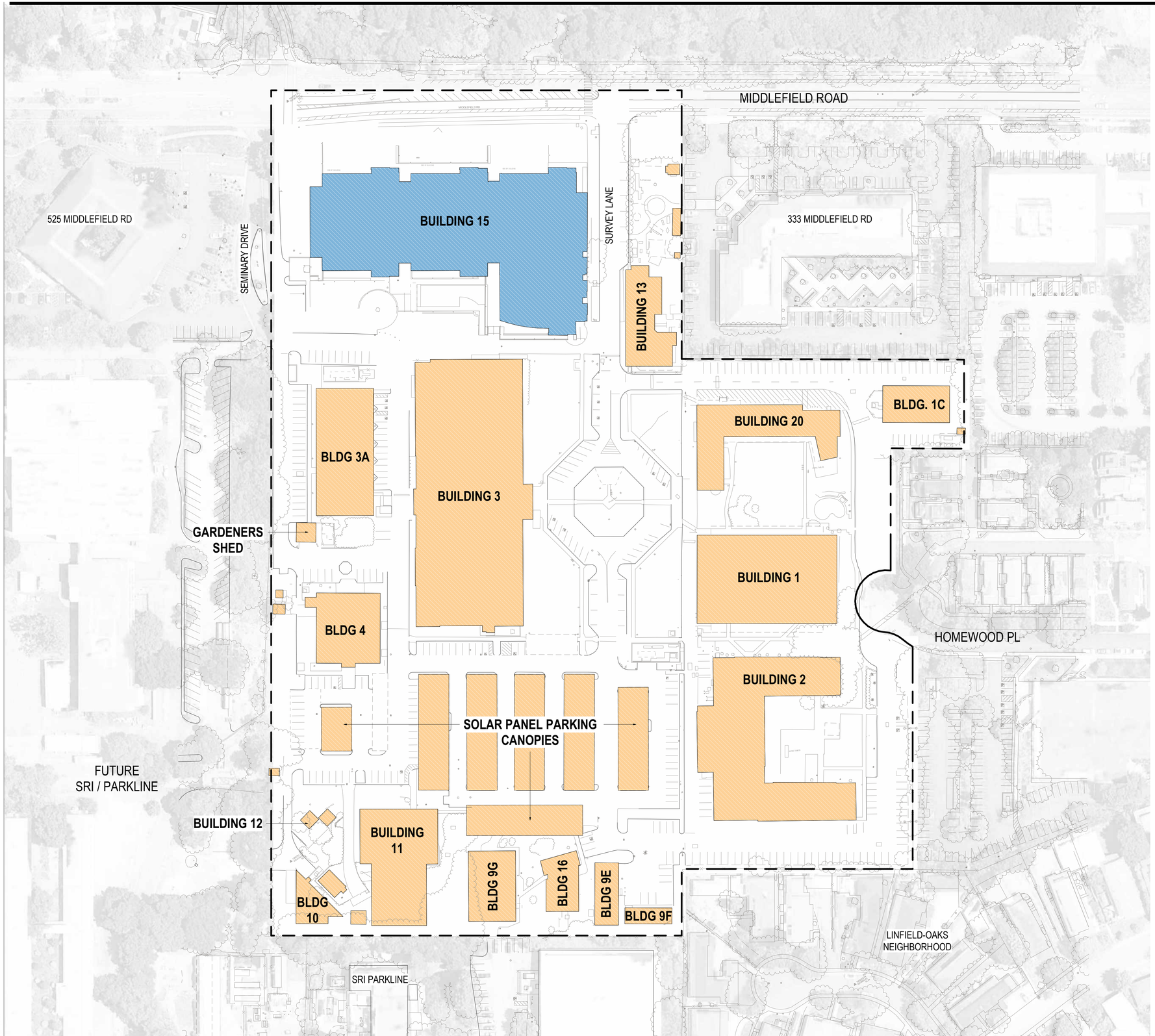

EXISTING BUILDING AREAS

Building Name	Building Use	Building Coverage (SF)	Gross Floor Area (SF)
Building 1	Office	20,633	42,614
Building 1C	Telecommunications	4,100	2,187
Building 2	Office	26,453	45,502
Building 3	Office	48,545	92,795
Building 3A	Office/Storage	12,190	11,388
Building 4	Office/Lab	8,066	12,584
Building 9E	Office	2,485	3,197
Building 9F	Storage	1,210	1,210
Building 9G	Office/Lab	5,550	5,477
Building 10	Lab/Storage	3,254	2,511
Building 11	Office/Lab	12,788	10,248
Building 12	Hazard Storage	543	470
Building 13	Childcare Facility	7,092	7,092
Builiding 15	Office/Lab	53,027	159,555
Building 16	Lab	3,174	3,174
Building 20	Office, Café, Credit Union	10,373	12,063
Gardners Shed	Storage Shed	596	596
	Parking Canopies	36,833	
Total Existing		**256,911**	**412,663**
Total To Be Removed		**203,884**	**253,108**
Total To Remain		**53,027**	**159,555**

LEGEND

- TO BE REMOVED
- TO REMAIN

GENERAL NOTES

1. ANY FUTURE DEMOLITION ASSOCIATED WITH THIS PROJECT WILL BE DESIGNED AND CARRIED OUT IN COMPLIANCE WITH ALL APPLICABLE CITY OF MENLO PARK REGULATIONS, THE CALIFORNIA BUILDING CODE, AND OTHER GOVERNING STATE AND REGIONAL REQUIREMENTS IN EFFECT AT THE TIME OF PERMIT ISSUANCE.
2. THE EXTENT OF DEMOLITION SHOWN IN THIS PLANNING APPLICATION IS CONCEPTUAL AND FOR ENTITLEMENT PURPOSES ONLY. FINAL DEMOLITION LIMITS, METHODS, AND SEQUENCING WILL BE CONFIRMED DURING BUILDING PERMIT PLAN REVIEW AND SUBJECT TO APPROVAL BY THE CITY AND RELEVANT AGENCIES.
3. FUTURE DEMOLITION ACTIVITIES WILL ADDRESS ALL AFFECTED BUILDING, SITE, AND UTILITY ELEMENTS IN COORDINATION WITH ARCHITECTURAL, STRUCTURAL, CIVIL, LANDSCAPE, AND MEP DISCIPLINES TO ENSURE PROTECTION OF ADJACENT PROPERTIES, PUBLIC RIGHTS-OF-WAY, AND EXISTING IMPROVEMENTS TO REMAIN.
4. ANY FUTURE DEMOLITION WILL INCORPORATE MEASURES TO PROTECT HERITAGE AND OTHER TREES TO REMAIN, CONSISTENT WITH THE CITY'S HERITAGE TREE ORDINANCE, ARBORIST RECOMMENDATIONS, AND APPROVED TREE-PROTECTION PLANS.
5. HANDLING AND ABATEMENT OF ANY HAZARDOUS MATERIALS DISCOVERED DURING DETAILED INVESTIGATION WILL BE ADDRESSED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS, AND WILL BE REVIEWED BY THE CITY AS PART OF SUBSEQUENT PERMIT APPLICATIONS.

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Date	Description
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Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
EXISTING BUILDING COVERAGE AND DEMOLITION PLAN

Scale
0' 30' 60' 120'
SCALE: 1" = 60'

G1.06

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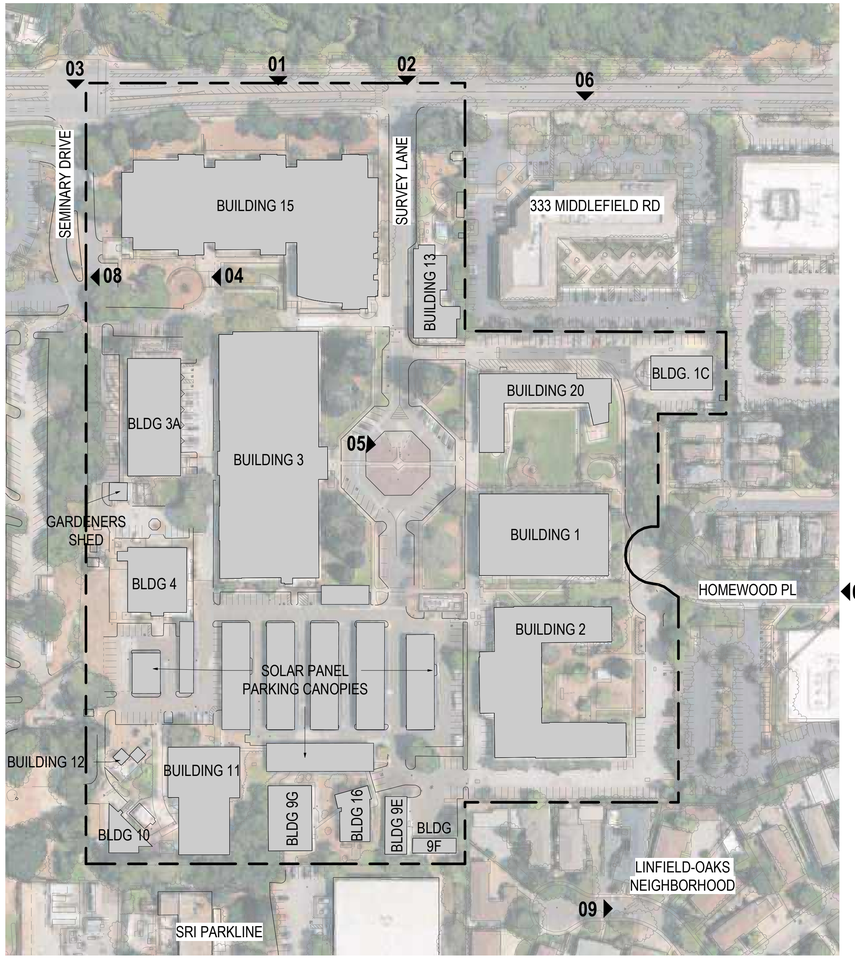
EXISTING BUILDING COVERAGE AND DEMOLITION PLAN

09- CENTRAL MENLO PARK

08- 525 MIDDLEFIELD RD

07- HOMEWOOD PLACE

06- LINFIELD OAKS



EXISTING CONDITIONS PHOTOS

0' 50' 100' 200'

05- EXISTING SURVEY LANE ROUNDABOUT FACING EAST

04- EXISTING OAK TREES (SOUTH FACADE OF BLDG 15)

03- INTERSECTION OF MIDDLEFIELD RD AND SEMINARY DR

02- INTERSECTION OF MIDDLEFIELD RD AND SURVEY LN

01- EXISTING BUILDING 15 FROM MIDDLEFIELD RD

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345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
EXISTING CONDITIONS PHOTOS

Scale
NOT TO SCALE

G1.07

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PRECEDENTS FOR MULTI-FAMILY BUILDINGS

GENERAL NOTES

1. THE PRECEDENT IMAGES ON THIS SHEET ARE PROVIDED FOR CONCEPTUAL AND ILLUSTRATIVE PURPOSES ONLY. THEY ARE INTENDED TO COMMUNICATE THE PROPOSED CHARACTER, MASSING APPROACH, AND ARCHITECTURAL QUALITY OF THE PROJECT BY BUILDING TYPE.
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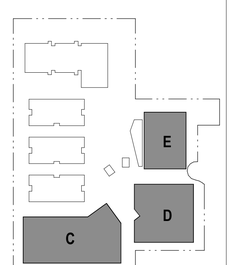
KEY PLAN



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Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
DESIGN PRECEDENT FOR MULTIFAMILY BUILDINGS

Scale
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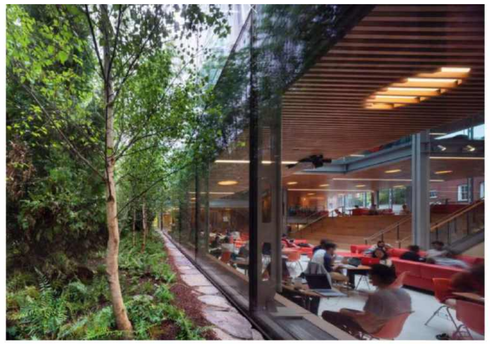

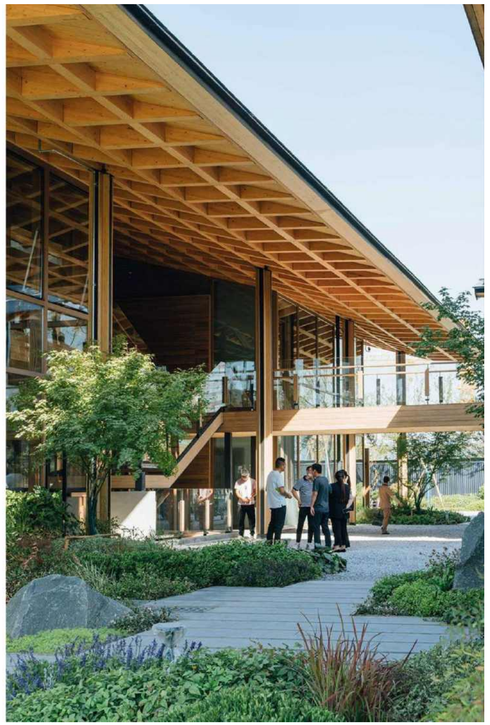

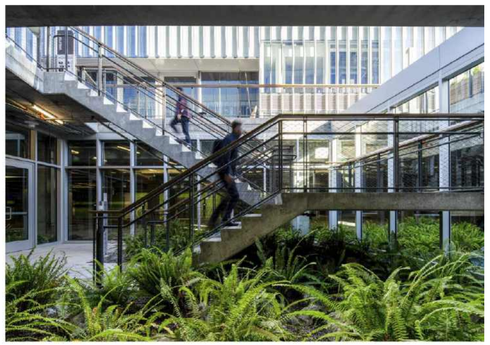

PRECEDENTS FOR OFFICE BUILDINGS

GENERAL NOTES

1. THE PRECEDENT IMAGES ON THIS SHEET ARE PROVIDED FOR CONCEPTUAL AND ILLUSTRATIVE PURPOSES ONLY. THEY ARE INTENDED TO COMMUNICATE THE PROPOSED CHARACTER, MASSING APPROACH, AND ARCHITECTURAL QUALITY OF THE PROJECT BY BUILDING TYPE.
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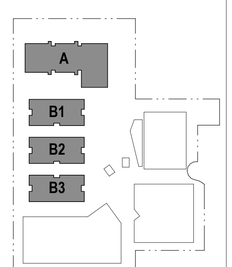
KEY PLAN



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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
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Description
DESIGN PRECEDENT FOR COMMERCIAL BUILDINGS

Scale
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G1.09

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PRECEDENTS FOR AMENITY AND PAVILION BUILDINGS

GENERAL NOTES

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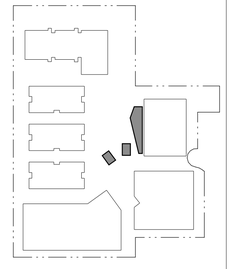

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Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
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Description
DESIGN PRECEDENT FOR AMENITY AND PAVILION BUILDINGS

Scale
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G1.10

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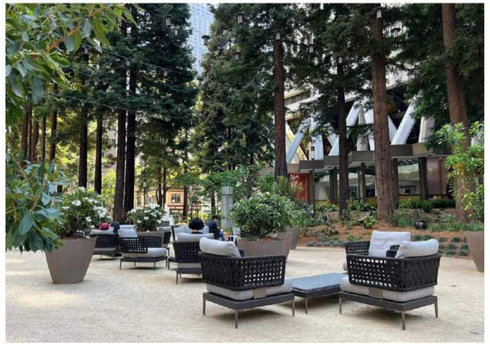

PRECEDENTS FOR PUBLIC SPACE & LANDSCAPE

GENERAL NOTES

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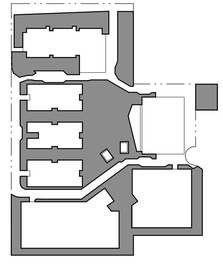
KEY PLAN



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Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
DESIGN PRECEDENT FOR PUBLIC SPACE AND LANDSCAPE

Scale
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G1.11

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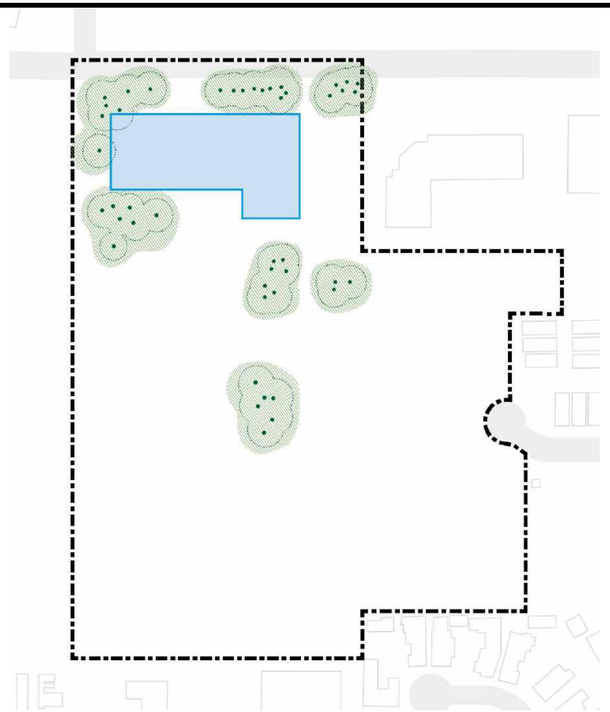
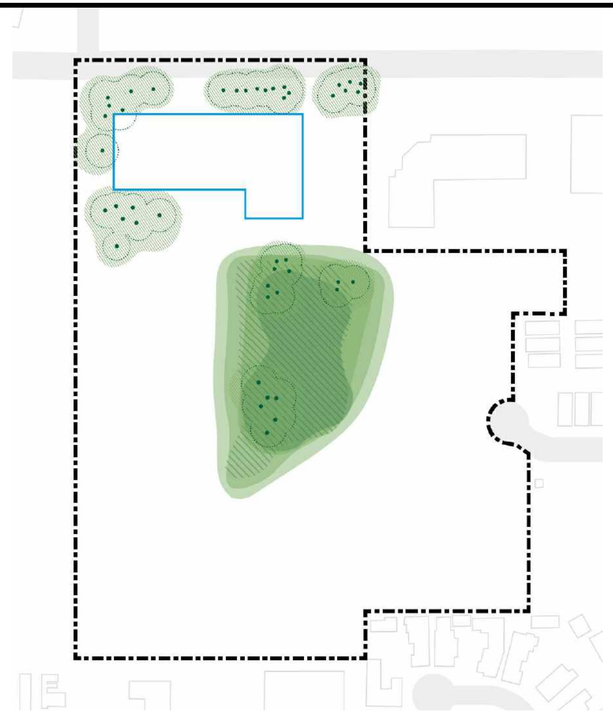


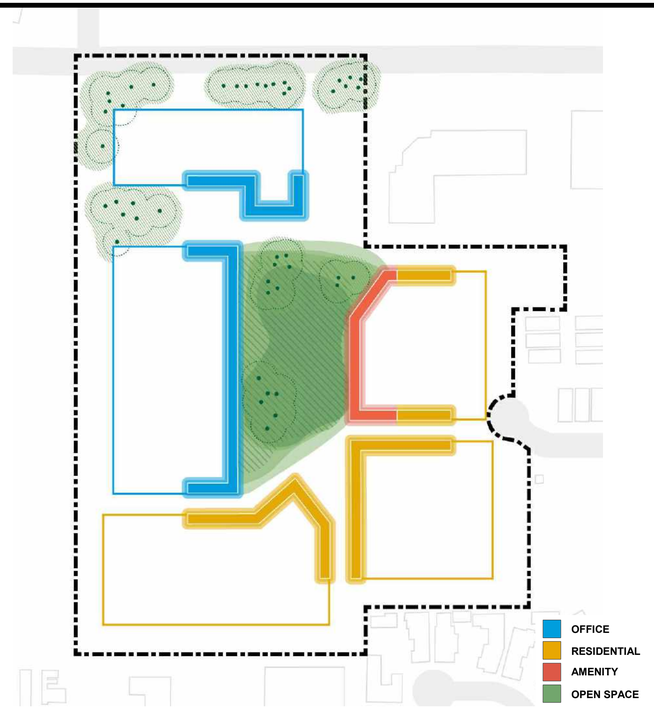
1 Keep what works

Preserve key site features including heritage trees and Building 15.



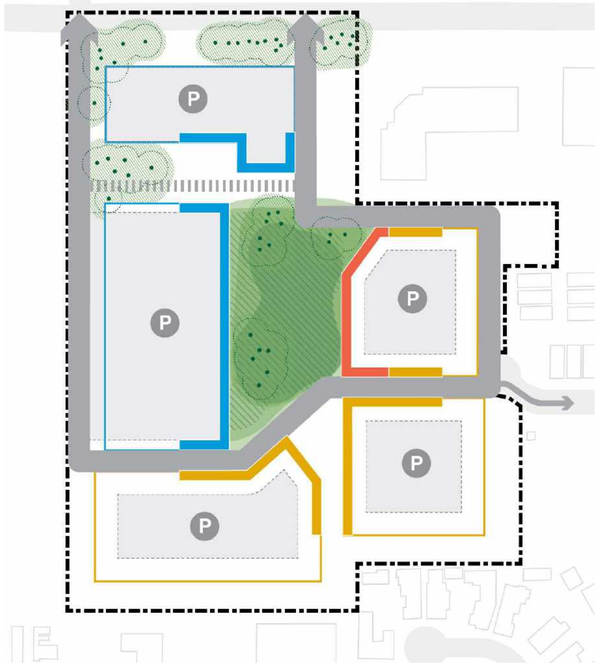
2 Re-wild the understory

Connect heritage tree groves to create a central open space.



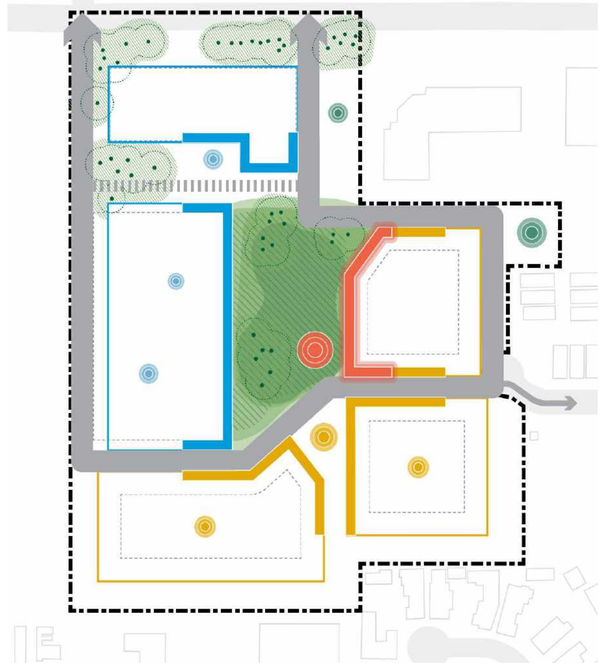
3 Edges for neighbors

A diverse and lively ecosystem of housing, office, retail and community amenities push up against the central forest, creating a dynamic heart.



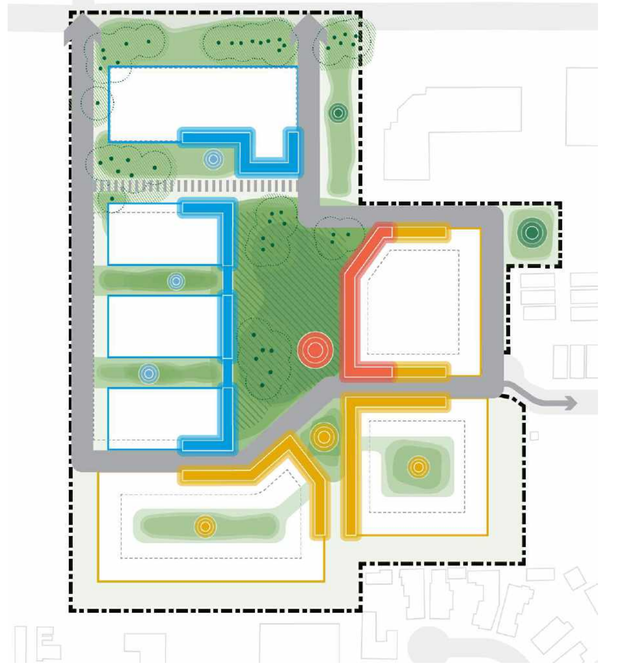
4 Functional access

Locate vehicular traffic and parking access along a perimeter street, leaving the core open space car-free.



5 A lively hub

Blur the boundaries between work and life with neighborhood retail, amenities, and vibrant outdoor spaces.



6 Connection to nature

Allow the forest to permeate through the neighborhood, providing direct access and glimpses of nature in everyday life.

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01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
ILLUSTRATIVE SITE DESIGN PRINCIPLES

Scale
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G2.00

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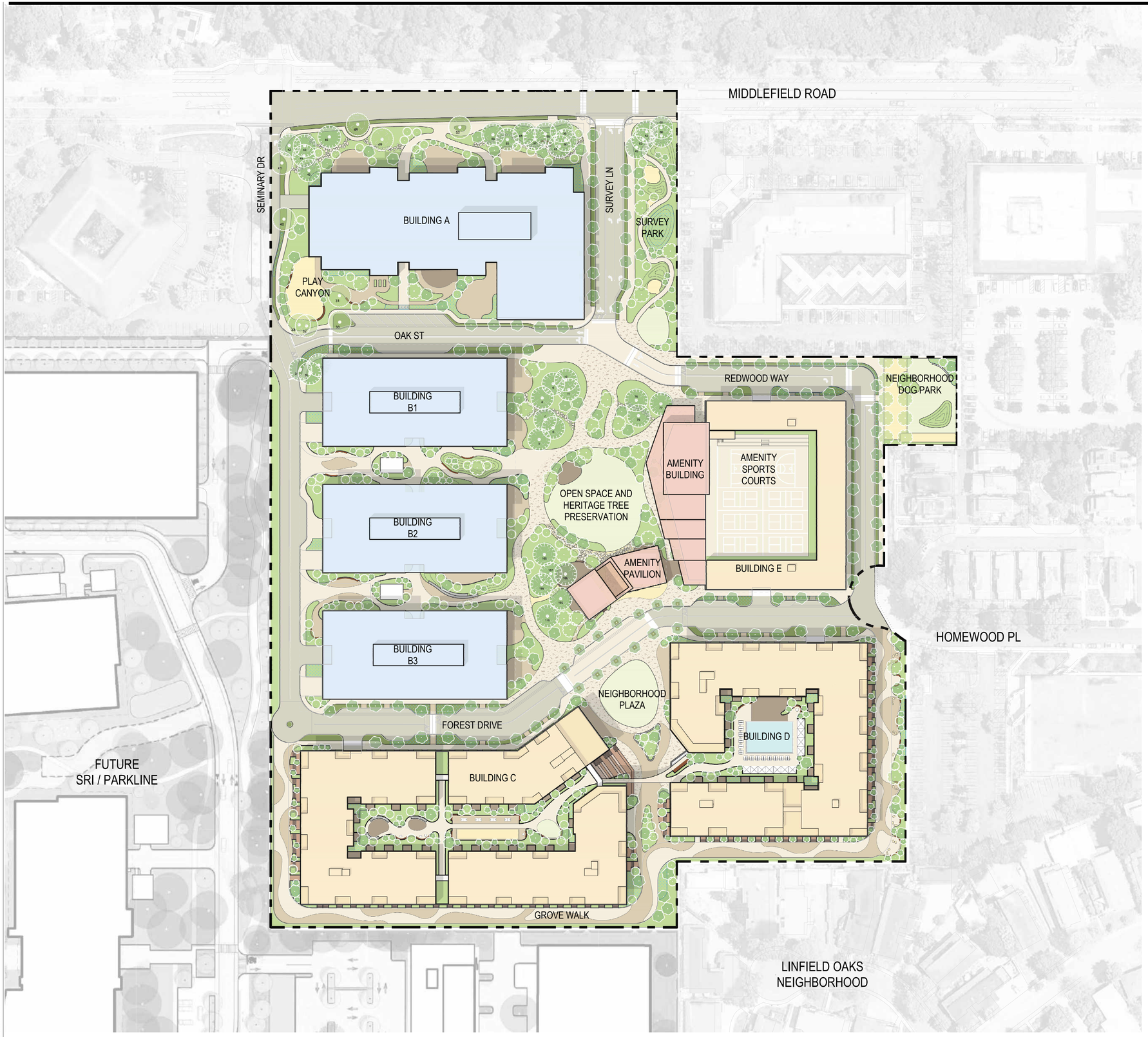

LEGEND

- COMMERCIAL
- RESIDENTIAL
- RETAIL/AMENITY
- HERITAGE TREE - REDWOOD
- HERITAGE TREE - OAK
- BUILDING MAIN ENTRANCE

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Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
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Description
ILLUSTRATIVE SITE PLAN

Scale
0' 30' 60' 120'
SCALE: 1" = 60'

G2.01

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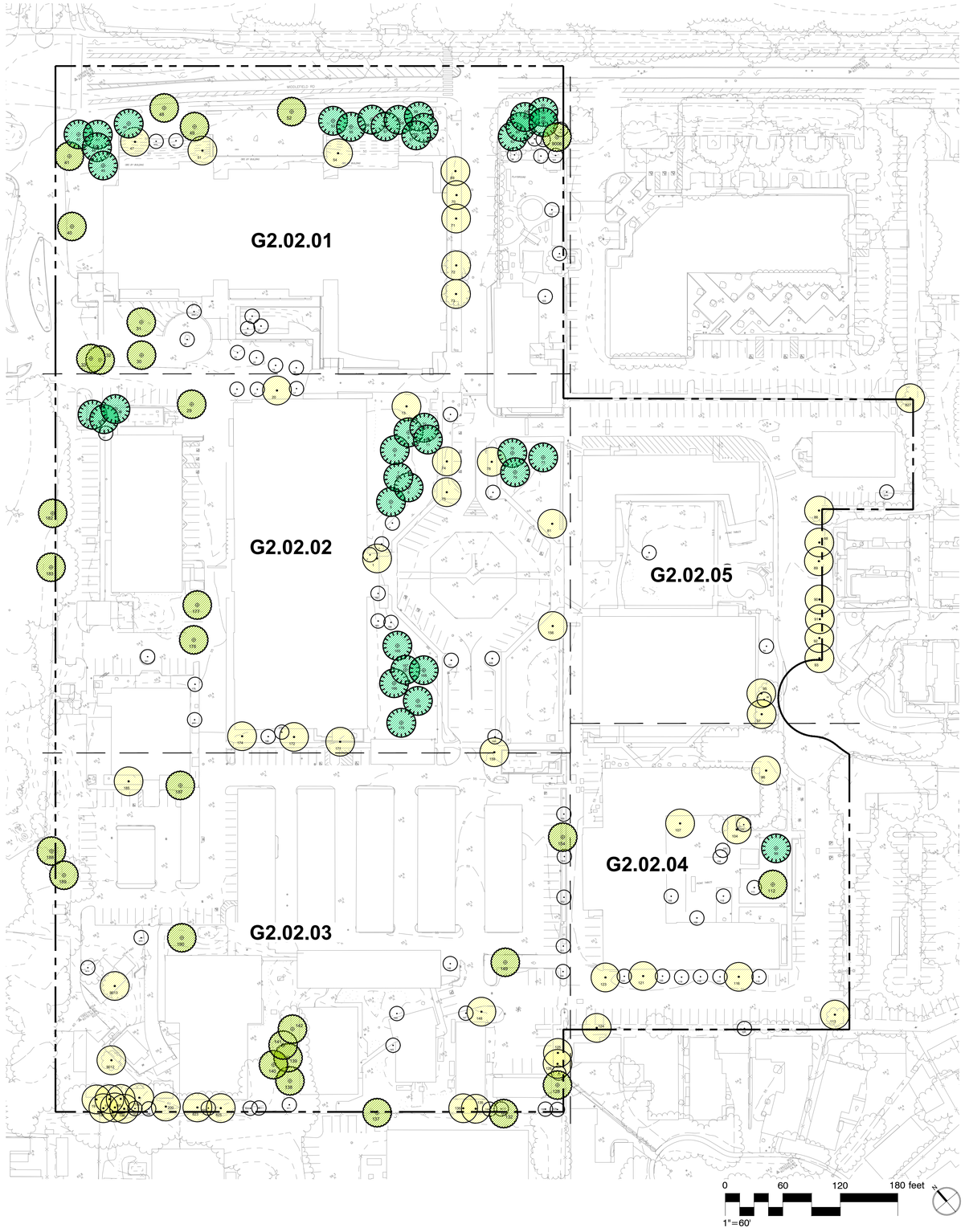

EXISTING TREE LEGEND

SYMBOL	TREE
	HERITAGE OAK TREE
	HERITAGE REDWOOD TREE
	HERITAGE OTHER TREE
	NON-HERITAGE TREE

EXISTING TREES	QTY
HERITAGE TREES	124
QUERCUS SPECIES	30
SEQUOIA SPECIES	38
OTHER SPECIES	56
NON-HERTAGE TREES	81
TOTAL EXISTING TREES	**205**

NOTE:
1. REFER TO ARBORIST REPORT FOR FULL INFORMATION REGARDING EXISTING TREES

PROPERTY LINE

MATCHLINE

Prioritize Existing Redwood and Oak Trees: The site currently contains 124 heritage trees, primarily coastal redwoods and oaks. The proposed plan will retain and protect 46 of these trees, including every heritage redwood, underscoring a strong commitment to the site's ecological character. As the design is refined in coordination with the City's Heritage Tree Ordinance and tree protection standards, the project will preserve the critical role these trees play in providing shade, wildlife habitat, and urban heat-island mitigation.

Tree Protection & Mitigation Measures: Tree protection and mitigation efforts will address the proposed removal of 159 trees (ref. Exhibit B), the majority of which are ornamental, non-native species located around existing surface parking areas. These efforts will be guided by Tree Preservation Guidelines prepared by the project arborist to safeguard retained trees before, during, and after construction, including measures such as protected root zones, construction fencing, and monitoring. In addition, the plan will ensure approriate replacemtn and mitigation planting consistent with applicable city requirements, with an emphasis on native and climate-adapted species, as well as long-term maintenance and monitoring to restore and enhance overall tree canopy and habitat calue on the site.

Biodiversity and Urban Forest Plan: New tree species will be predominantly native or climate-adapted, drought-tolerant, non-invasive, and sited to avoid conflicts with utilities and infrastructure, supporting compliance with Menlo Park's Water-Efficient Landscaping Ordinance (WELO) and broader urban forest goals. Overall, the project will implement a biodiversity and urban forest strategy targeting a high proportion of native planting, with ground-level landscapes composed of resilient species tailored to each space's function ranging from high-traffic plazas to quieter passive-use areas so as to enhance habitat value and support a robust tree canopy over time.

Monarch Pledge: The landscape strategy will also embrace pollinator-supportive design, including a "Monarch Pledge"-inspired approach that integrates native, pollinator-friendly species such as seasonal milkweed and nectar-rich plantings throughout plazas, greenways, and garden areas to support butterfly migration and other beneficial insects.

Dark Sky Ordinance: Exterior lighting will be designed to follow Dark Sky-inspired best practices, minimizing glare, light spill, and sky glow, while meeting safety needs, thereby supporting nighttime habitat, preserving views of the night sky, and contributing to a comfortable, pedestrian-oriented evinging environment.

PRESIDIO BAY

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LANGAN

WATRY DESIGN, INC.
Architects + Engineers + Pitching Pioneers

△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
EXISTING TREE SURVEY PLAN

Scale
1" = 60'-0"

G2.02

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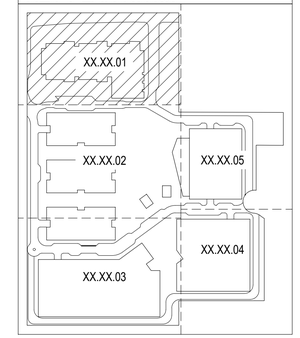
EXISTING TREE LEGEND

SYMBOL	TREE
	HERITAGE OAK TREE
	HERITAGE REDWOOD TREE
	HERITAGE OTHER TREE
	NON-HERITAGE TREE

KEY PLAN N.T.S.



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WATRY DESIGN, INC.
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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
EXISTING TREE SURVEY PLAN
ENLARGEMENT A

Scale
1" = 20'-0"

G2.02.01

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REFER TO G2.02.01
MATCHLINE

PROPERTY LINE

EXISTING BUILDING 3A

EXISTING BUILDING 3

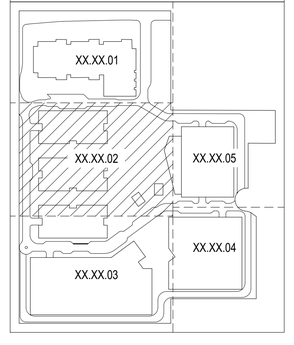
MATCHLINE
REFER TO G2.02.05

MATCHLINE
REFER TO G2.02.03

EXISTING TREE LEGEND

SYMBOL	TREE
TREE NO.	HERITAGE OAK TREE
TREE NO.	HERITAGE REDWOOD TREE
TREE NO.	HERITAGE OTHER TREE
	NON-HERITAGE TREE

KEY PLAN N.T.S.



0 20 40 60 feet
1"=20'

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
EXISTING TREE SURVEY PLAN
ENLARGEMENT B

Scale
1" = 20'-0"

G2.02.02

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SOLAR PANEL PARKING STRUCTURE

EXISTING BUILDING 11

EXISTING BUILDING 9G

EXISTING BUILDING 16

EXISTING BUILDING 9E

EXISTING BUILDING 9F

REFER TO G2.02.02 MATCHLINE

MATCHLINE REFER TO G2.02.04

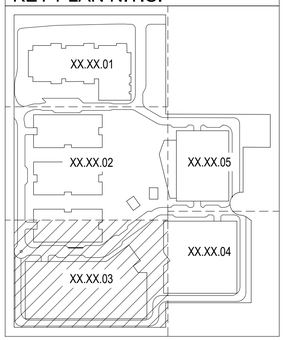
PROPERTY LINE

PROPERTY LINE

EXISTING TREE LEGEND

SYMBOL	TREE
	HERITAGE OAK TREE
	HERITAGE REDWOOD TREE
	HERITAGE OTHER TREE
	NON-HERITAGE TREE

KEY PLAN N.T.S.



0 20 40 60 feet

1"=20'

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WATRY DESIGN, INC.

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
EXISTING TREE SURVEY PLAN
ENLARGEMENT C

Scale
1" = 20'-0"

G2.02.03

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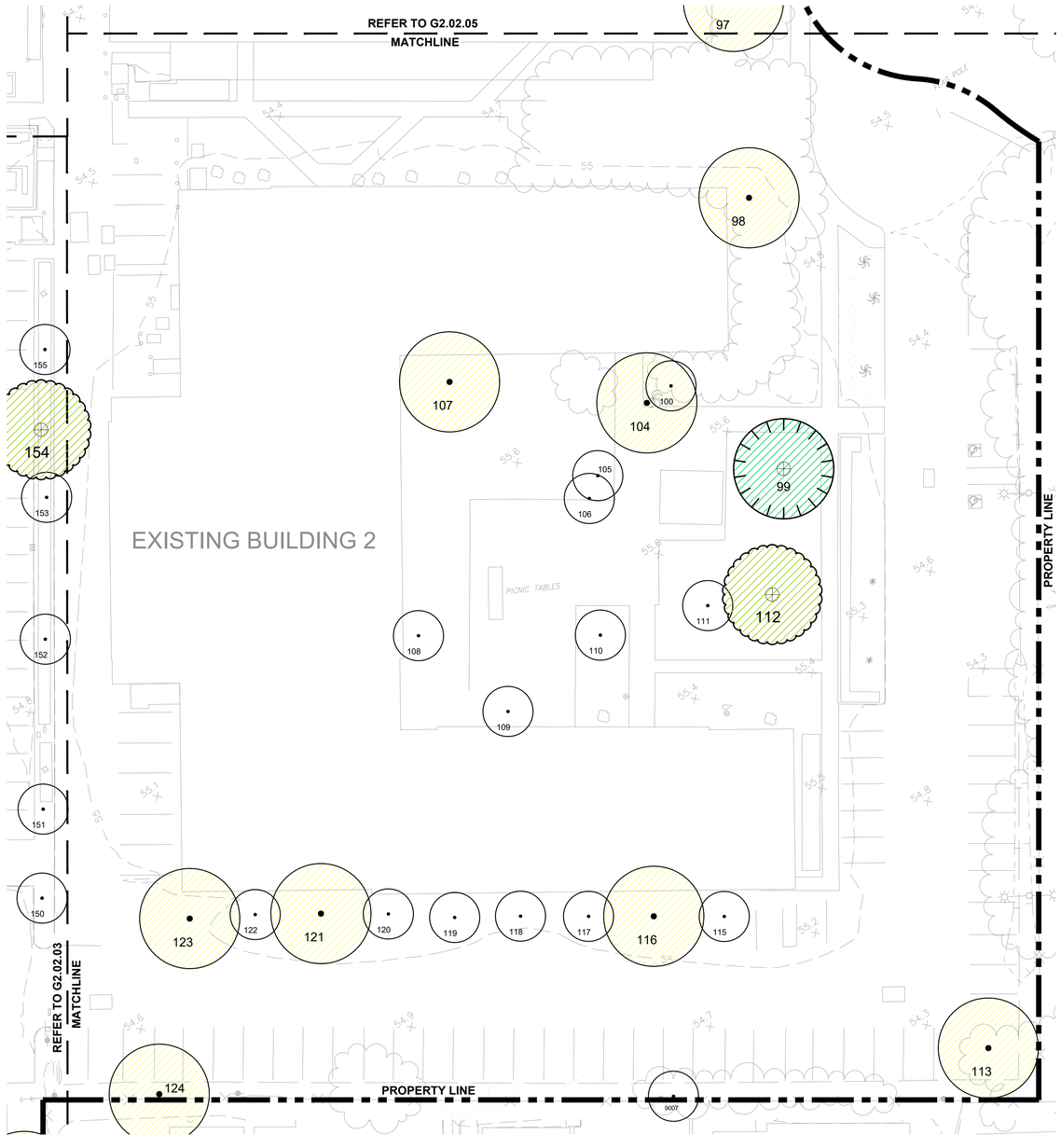
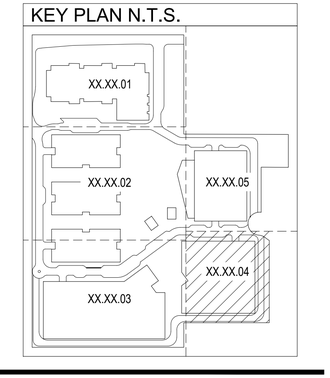
EXISTING TREE LEGEND	
SYMBOL	TREE
TREE NO.	HERITAGE OAK TREE
TREE NO.	HERITAGE REDWOOD TREE
TREE NO.	HERITAGE OTHER TREE
	NON-HERITAGE TREE



0 20 40 60 feet

1"=20'

KEY PLAN N.T.S.



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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
EXISTING TREE SURVEY PLAN
ENLARGEMENT D

Scale
1" = 20'-0"

G2.02.04

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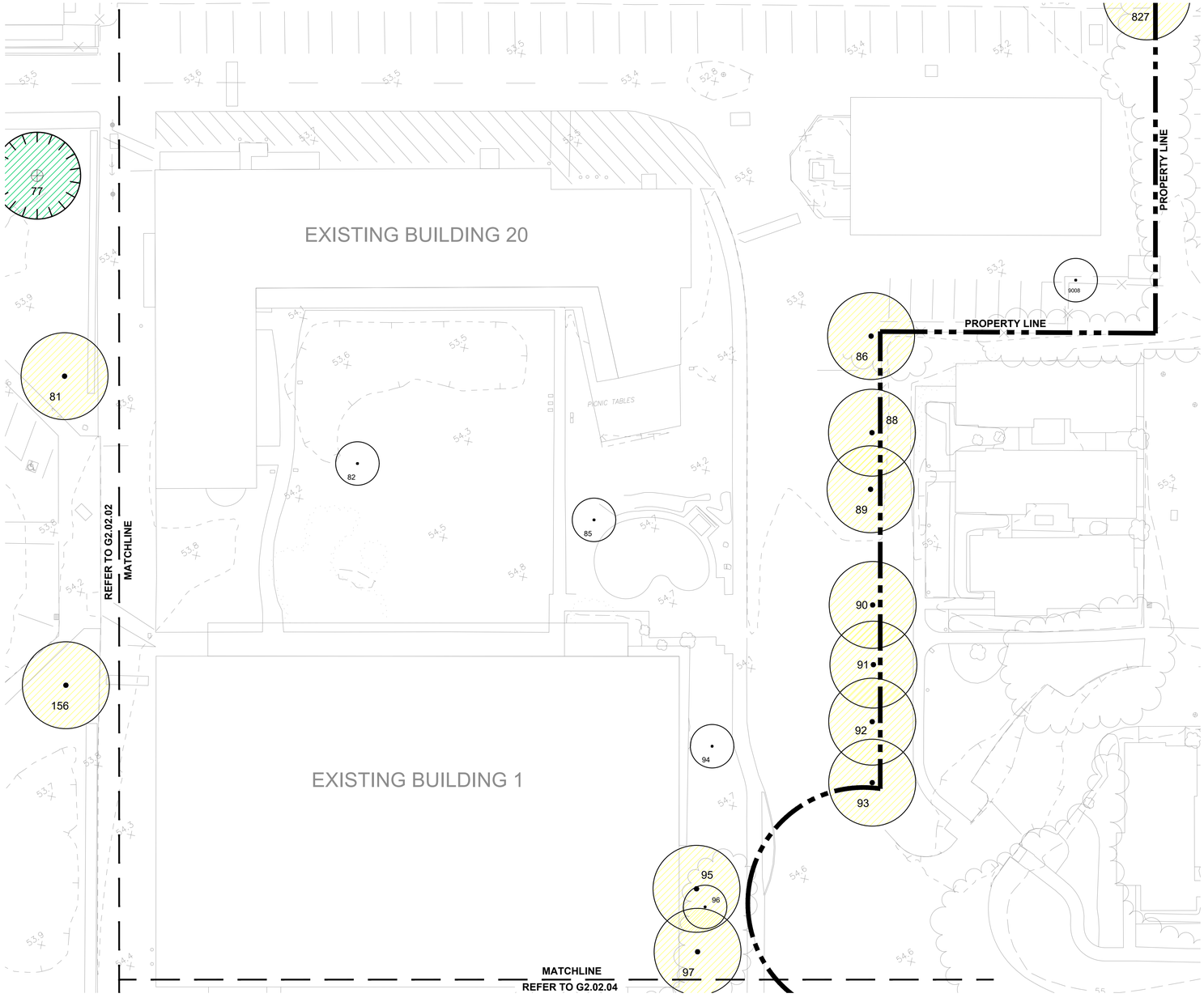
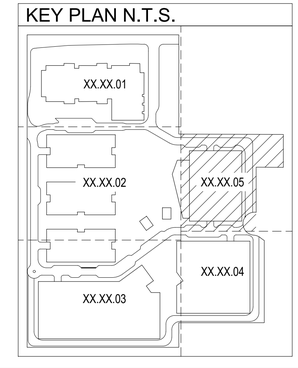
EXISTING TREE LEGEND	
SYMBOL	TREE
TREE NO.	HERITAGE OAK TREE
TREE NO.	HERITAGE REDWOOD TREE
TREE NO.	HERITAGE OTHER TREE
	NON-HERITAGE TREE



0 20 40 60 feet

1"=20'

KEY PLAN N.T.S.



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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
EXISTING TREE SURVEY PLAN
ENLARGEMENT E

Scale
1" = 20'-0"

G2.02.05

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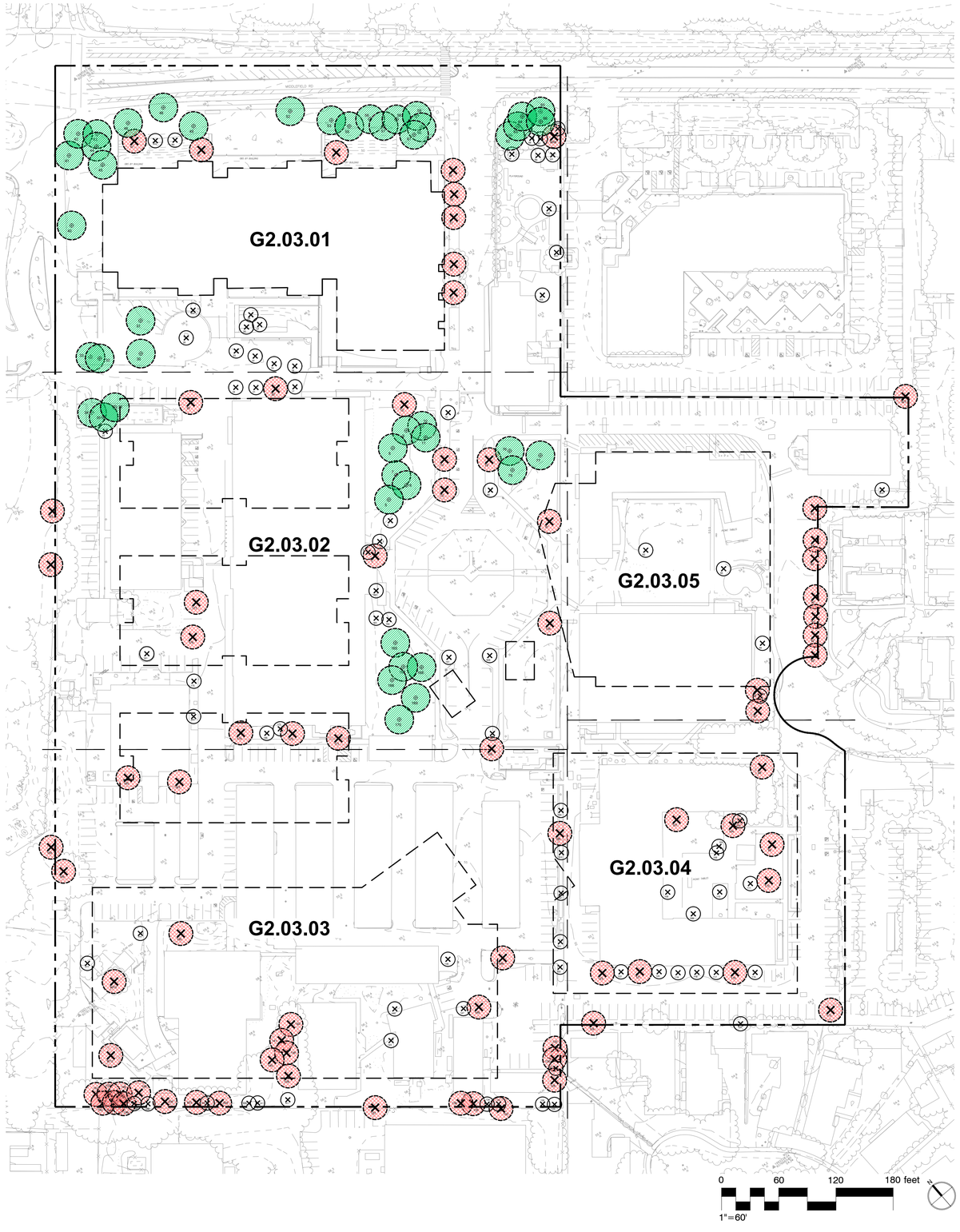

TREE DISPOSITION LEGEND	
SYMBOL	TREE
	HERITAGE TREE TO PROTECT IN PLACE
	HERITAGE TREE TO REMOVE
	NON-HERITAGE TREE TO REMOVE

TREE DISPOSITION	QTY
HERITAGE TREES TO PROTECT IN PLACE	46
QUERCUS SPECIES	9
SEQUOIA SPECIES	37
HERITAGE TREES TO REMOVE	78
QUERCUS SPECIES	21
SEQUOIA SPECIES	1
OTHER SPECIES	56
NON-HERTAGE TREES TO REMOVE	81
TOTAL EXISTING TREES	**205**

NOTE:
1. REFER TO ARBORIST REPORT FOR FULL INFORMATION REGARDING EXISTING TREES

PROPERTY LINE

MATCHLINE

PROPOSED BUILDING

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE DISPOSITION PLAN - HERITAGE

Scale
1" = 60'-0"

G2.03

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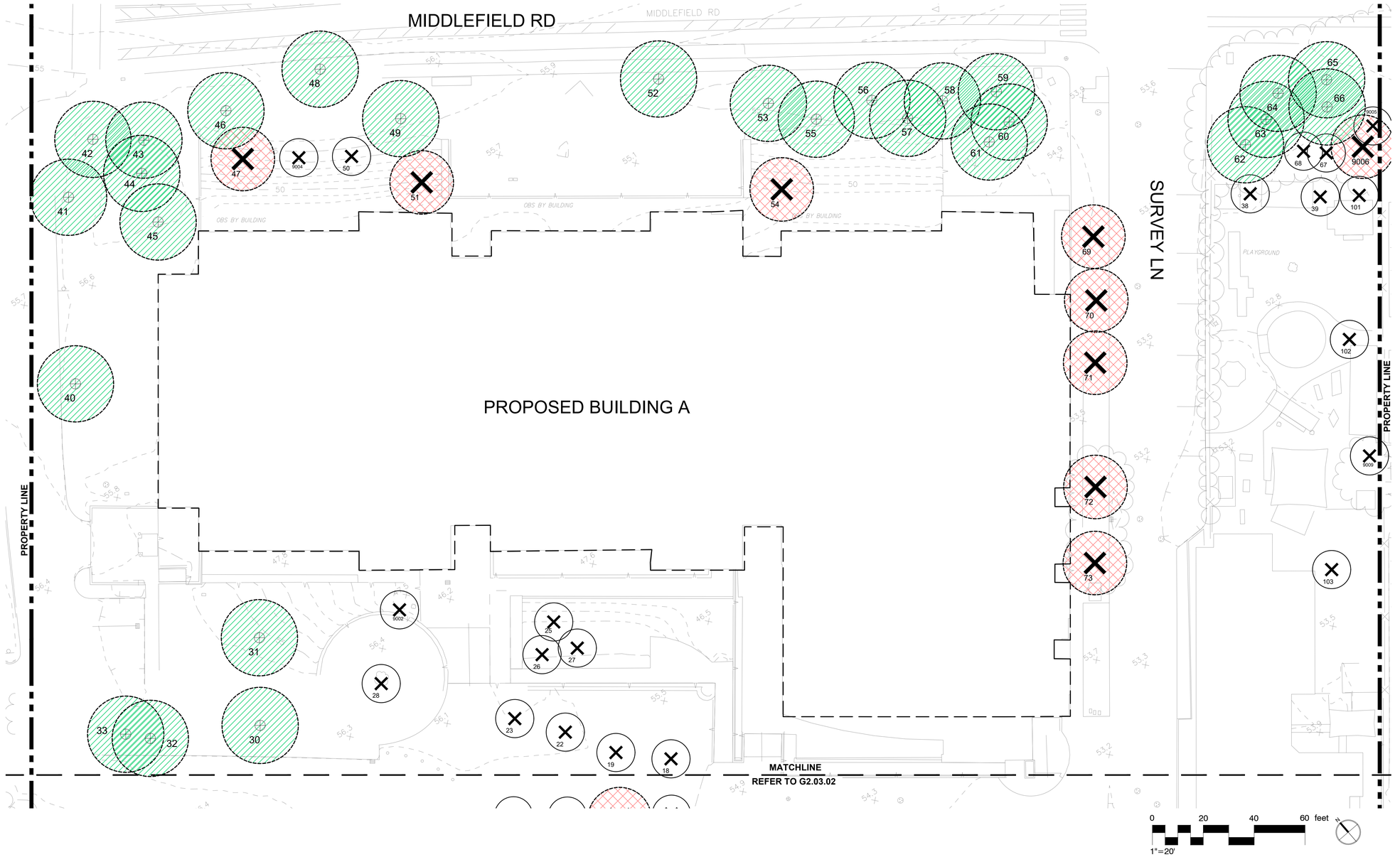
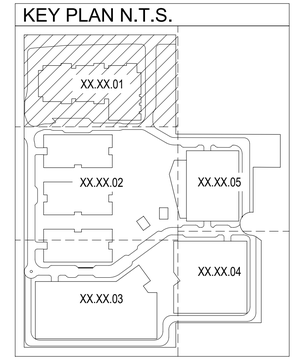


TREE DISPOSITION LEGEND

SYMBOL	TREE
	HERITAGE TREE TO PROTECT IN PLACE
	HERITAGE TREE TO REMOVE
	NON-HERITAGE TREE TO REMOVE

KEY PLAN N.T.S.



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Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE DISPOSITION PLAN
HERITAGE A

Scale
1" = 20'-0"

G2.03.01

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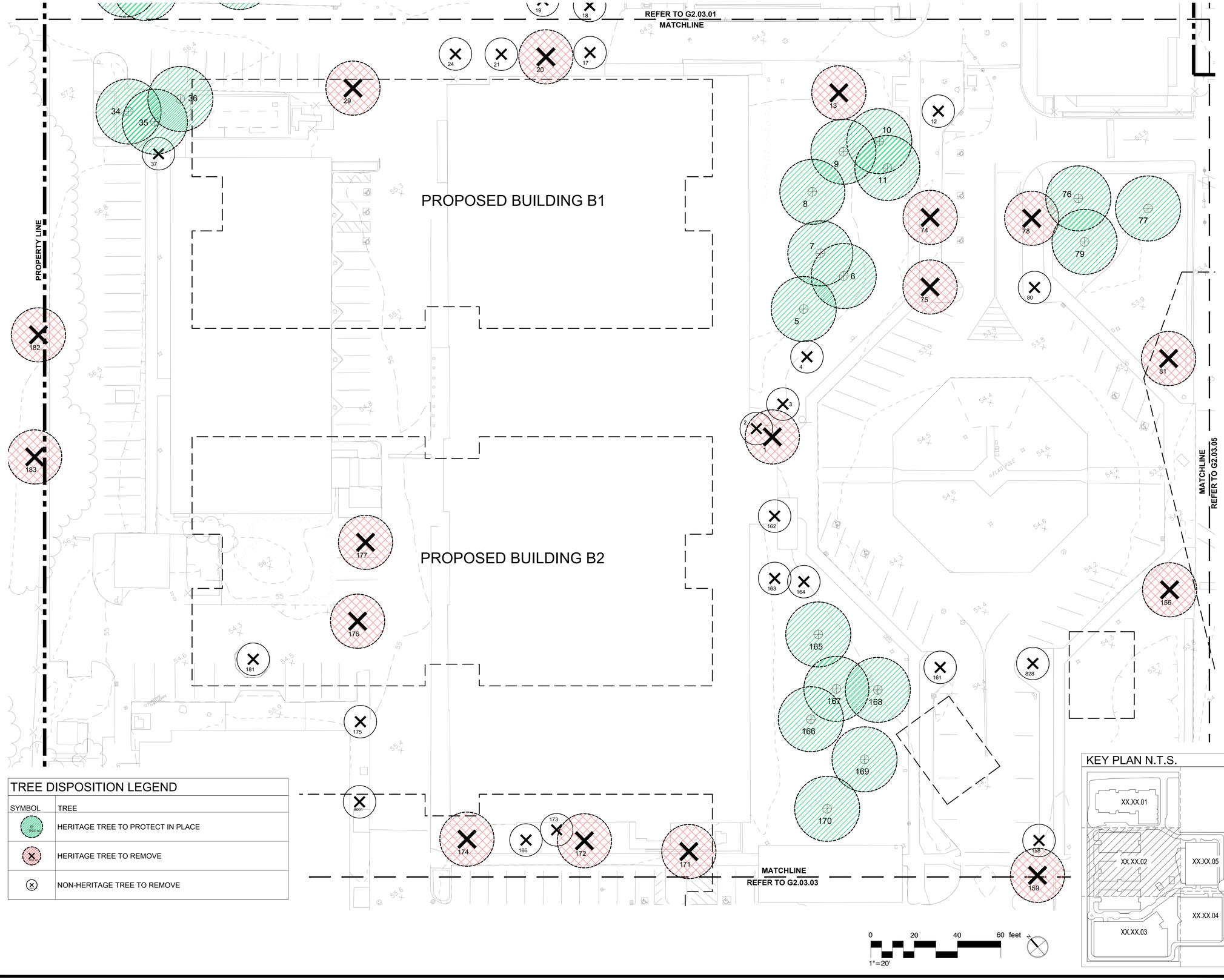
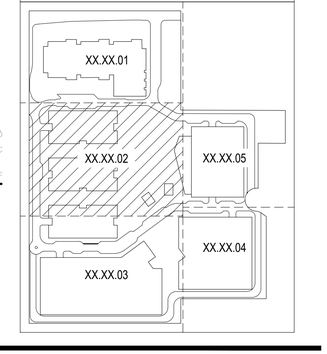


TREE DISPOSITION LEGEND	
SYMBOL	TREE
	HERITAGE TREE TO PROTECT IN PLACE
	HERITAGE TREE TO REMOVE
	NON-HERITAGE TREE TO REMOVE

KEY PLAN N.T.S.



0 20 40 60 feet
1"=20'

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE DISPOSITION PLAN
HERITAGE B

Scale
1" = 20'-0"

G2.03.02

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PROPOSED BUILDING B3

PROPOSED BUILDING C

REFER TO G2.03.02
MATCHLINE

MATCHLINE
REFER TO G2.03.04

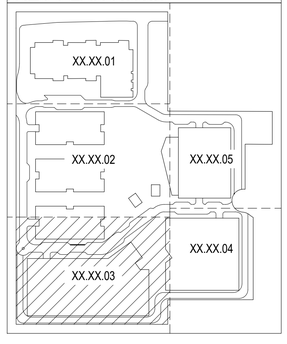
PROPERTY LINE

PROPERTY LINE

TREE DISPOSITION LEGEND

SYMBOL	TREE
	HERITAGE TREE TO PROTECT IN PLACE
	HERITAGE TREE TO REMOVE
	NON-HERITAGE TREE TO REMOVE

KEY PLAN N.T.S.



0 20 40 60 feet

1"=20'

PRESIDIO BAY

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE DISPOSITION PLAN
HERITAGE C

Scale
1" = 20'-0"

G2.03.03

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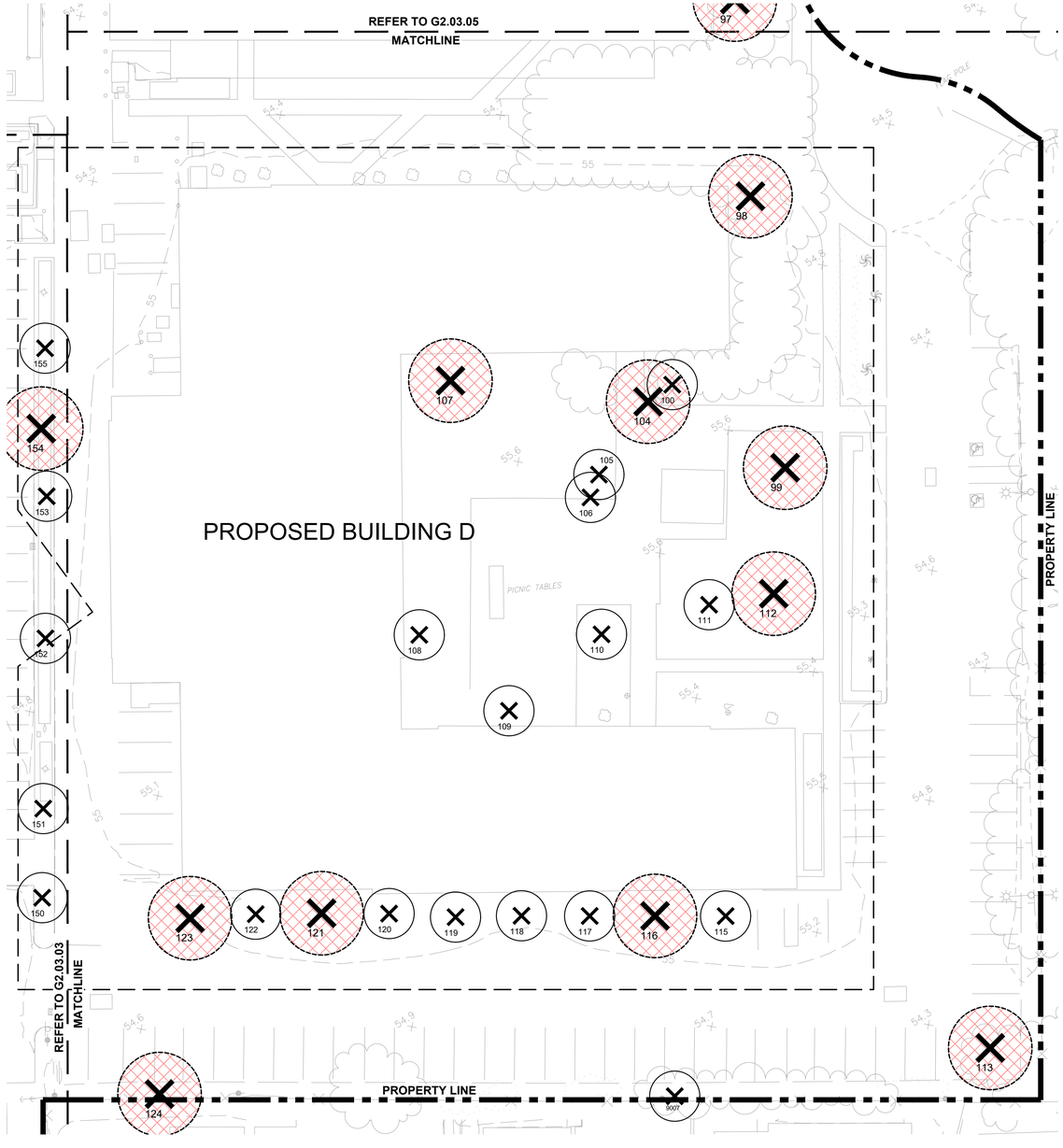
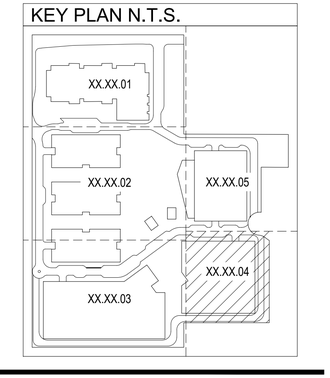
TREE DISPOSITION LEGEND	
SYMBOL	TREE
	HERITAGE TREE TO PROTECT IN PLACE
	HERITAGE TREE TO REMOVE
	NON-HERITAGE TREE TO REMOVE



0 20 40 60 feet

1"=20'

KEY PLAN N.T.S.



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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE DISPOSITION PLAN
ENLARGEMENT D

Scale
1" = 20'-0"

G2.03.04

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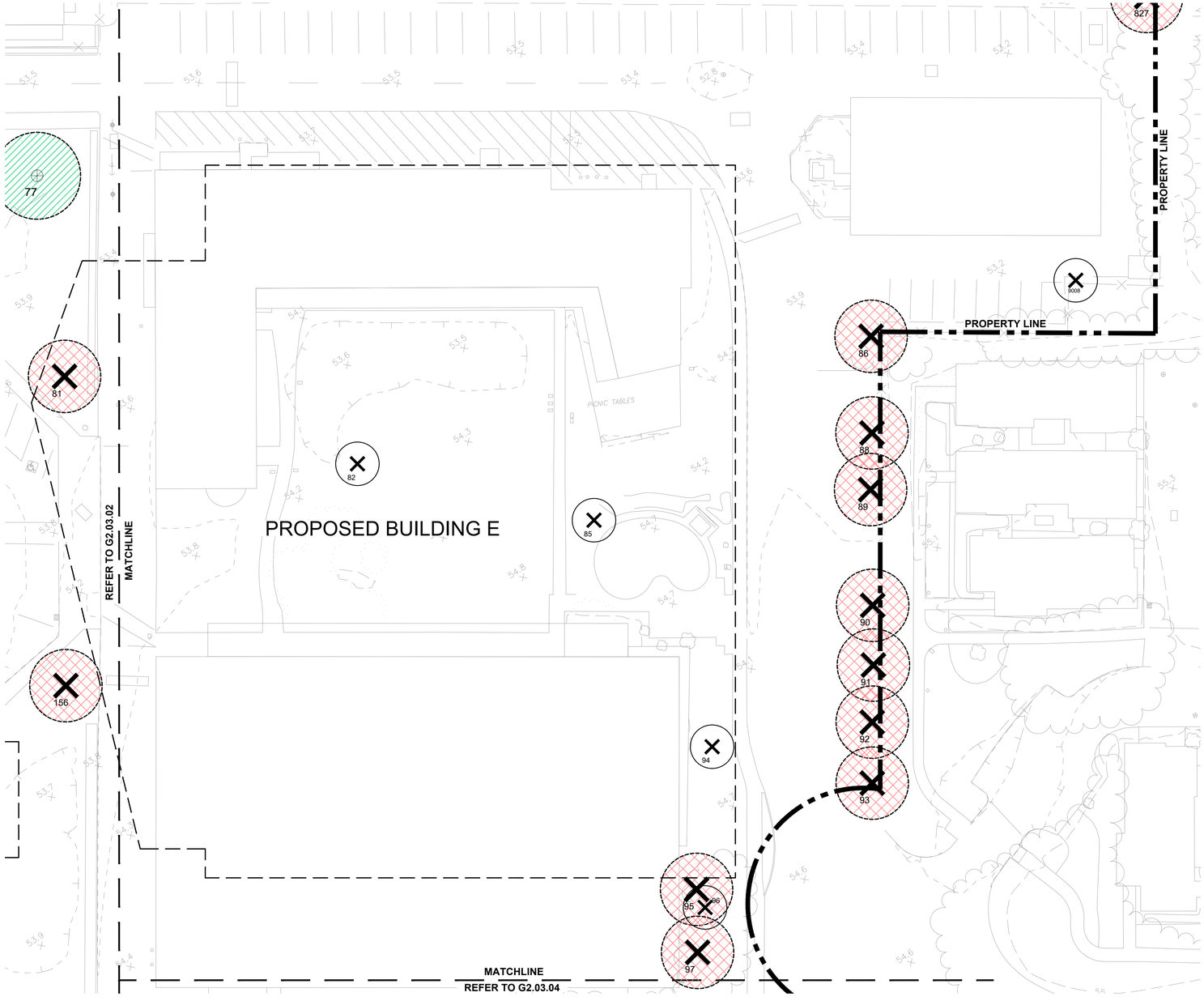
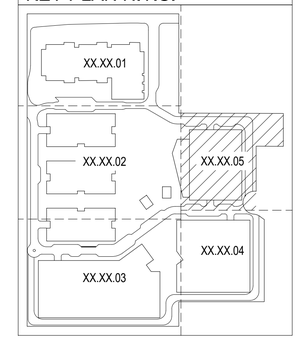
TREE DISPOSITION LEGEND	
SYMBOL	TREE
	HERITAGE TREE TO PROTECT IN PLACE
	HERITAGE TREE TO REMOVE
	NON-HERITAGE TREE TO REMOVE



0 20 40 60 feet

1"=20'

KEY PLAN N.T.S.



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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE DISPOSITION PLAN
HERITAGE E

Scale
1" = 20'-0"

G2.03.05

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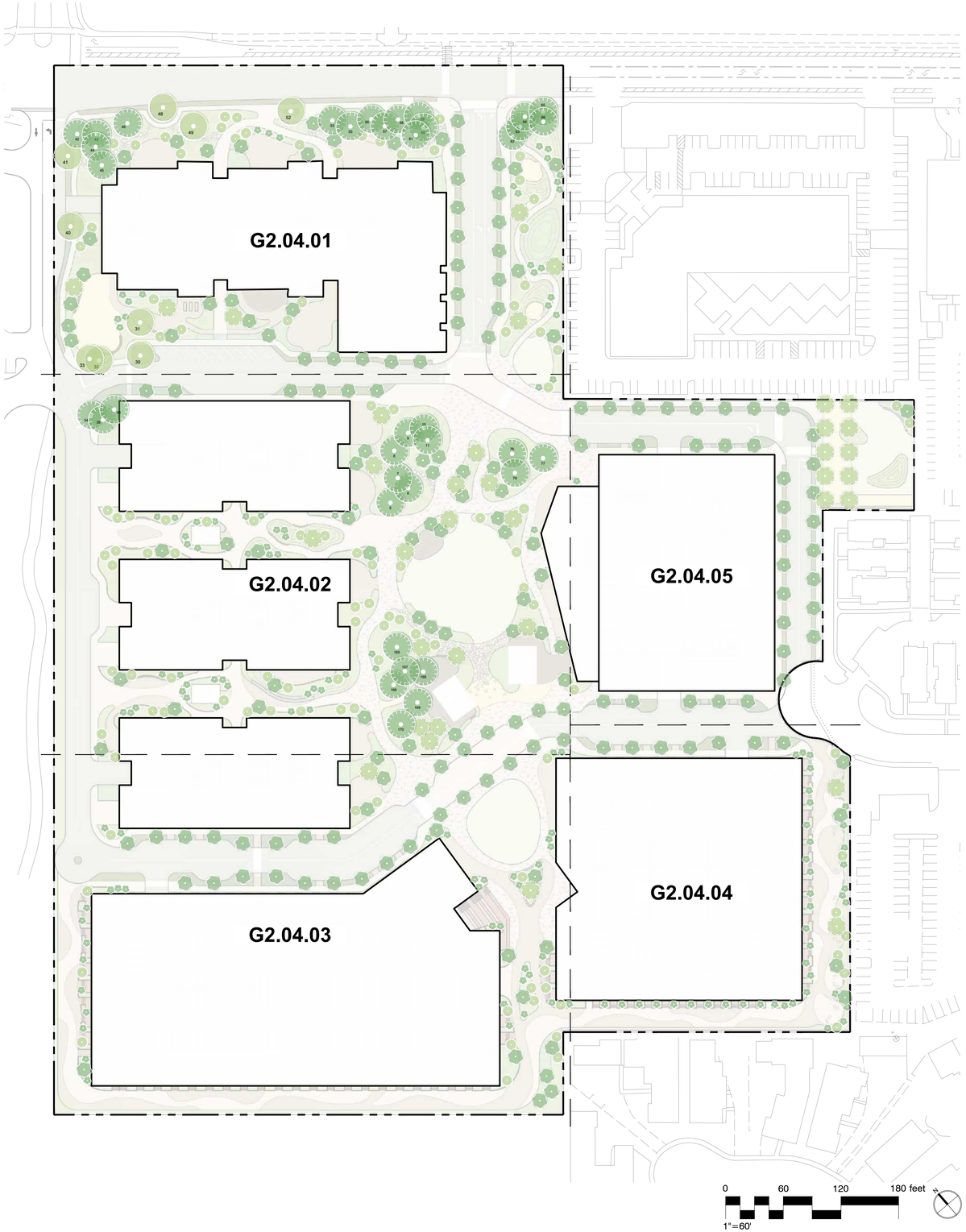

TREE LEGEND	
SYMBOL	TREE
	PROPOSED TREE - 24" BOX AECULUS CALIFORNICA (CALIFORNIA BUCKEYE) ARBUTUS MARINA (STRAWBERRY TREE) CERCIS OCCIDENTALIS (WESTERN REDBUD) UMBELLULARIA CALIFORNICA (CALIFORNIA BAY LAUREL)
	PROPOSED TREE - 36" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) ARBUTUS MARINA (STRAWBERRY TREE) TIPUANA TIPU (TIPU TREE) UMBELLULARIA CALIFORNIA (CALIFORNIA BAY LAUREL)
	PROPOSED TREE - 48" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) TIPUANA TIPU (TIPU TREE) SEQUOIA SEMPERVIRENS (REDWOOD)
	PROPOSED TREE - 60" BOX QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) SEQUOIA SEMPERVIRENS (REDWOOD)
TREE NO.	EXISTING OAK TREE
TREE NO.	EXISTING REDWOOD TREE

TREE REPLACEMENT	REQUIRED
#5 GALLON	2
#15 GALLON	34
24" BOX	29
36" BOX	7
48" BOX	5
60" BOX	1

NOTE:
1. TREE REPLACEMENT SHALL COMPLY WITH ALL CITY OF MENLO PARK HERITAGE TREE REPLACEMENT REQUIREMENTS AND ORDINANCE.

PROPERTY LINE

MATCHLINE

PRESIDIO BAY

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE REPLACEMENT PLAN

Scale
1" = 60'-0"

G2.04

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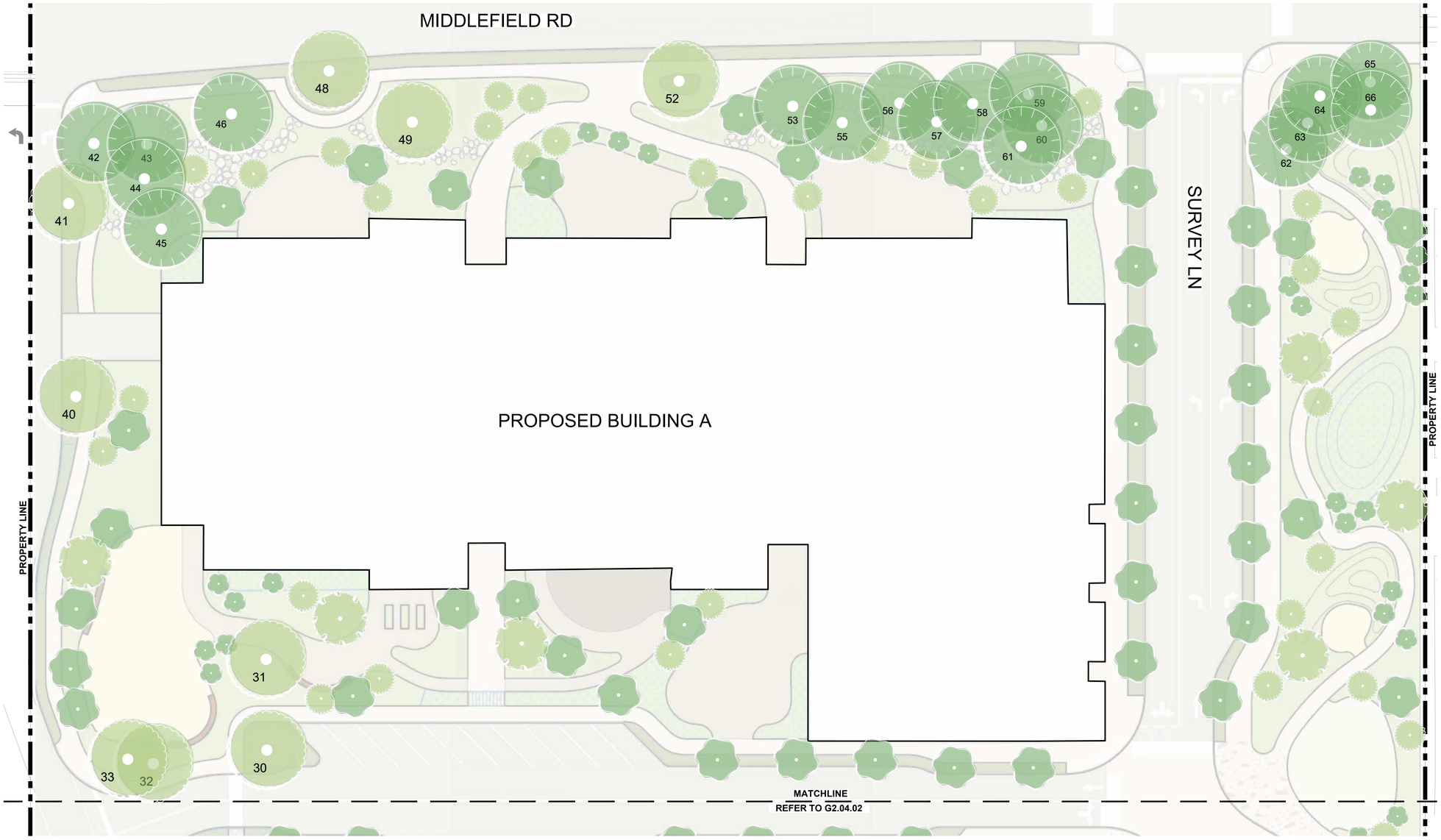

TREE LEGEND

SYMBOL	TREE
	PROPOSED TREE - 24" BOX AECULUS CALIFORNICA (CALIFORNIA BUCKEYE) ARBUTUS MARINA (STRAWBERRY TREE) CERCIS OCCIDENTALIS (WESTERN REDBUD) UMBELLULARIA CALIFORNICA (CALIFORNIA BAY LAUREL)
	PROPOSED TREE - 36" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) ARBUTUS MARINA (STRAWBERRY TREE) TIPUANA TIPU (TIPU TREE) UMBELLULARIA CALIFORNIA (CALIFORNIA BAY LAUREL)
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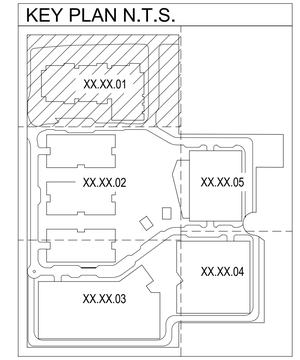
	PROPOSED TREE - 60" BOX QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) SEQUOIA SEMPERVIRENS (REDWOOD)
TREE NO.	EXISTING OAK TREE
TREE NO.	EXISTING REDWOOD TREE

KEY PLAN N.T.S.



PRESIDIO BAY

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WATRY DESIGN, INC.

△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE REPLACEMENT PLAN ENLARGEMENT A

Scale
1" = 20'-0"

G2.04.01

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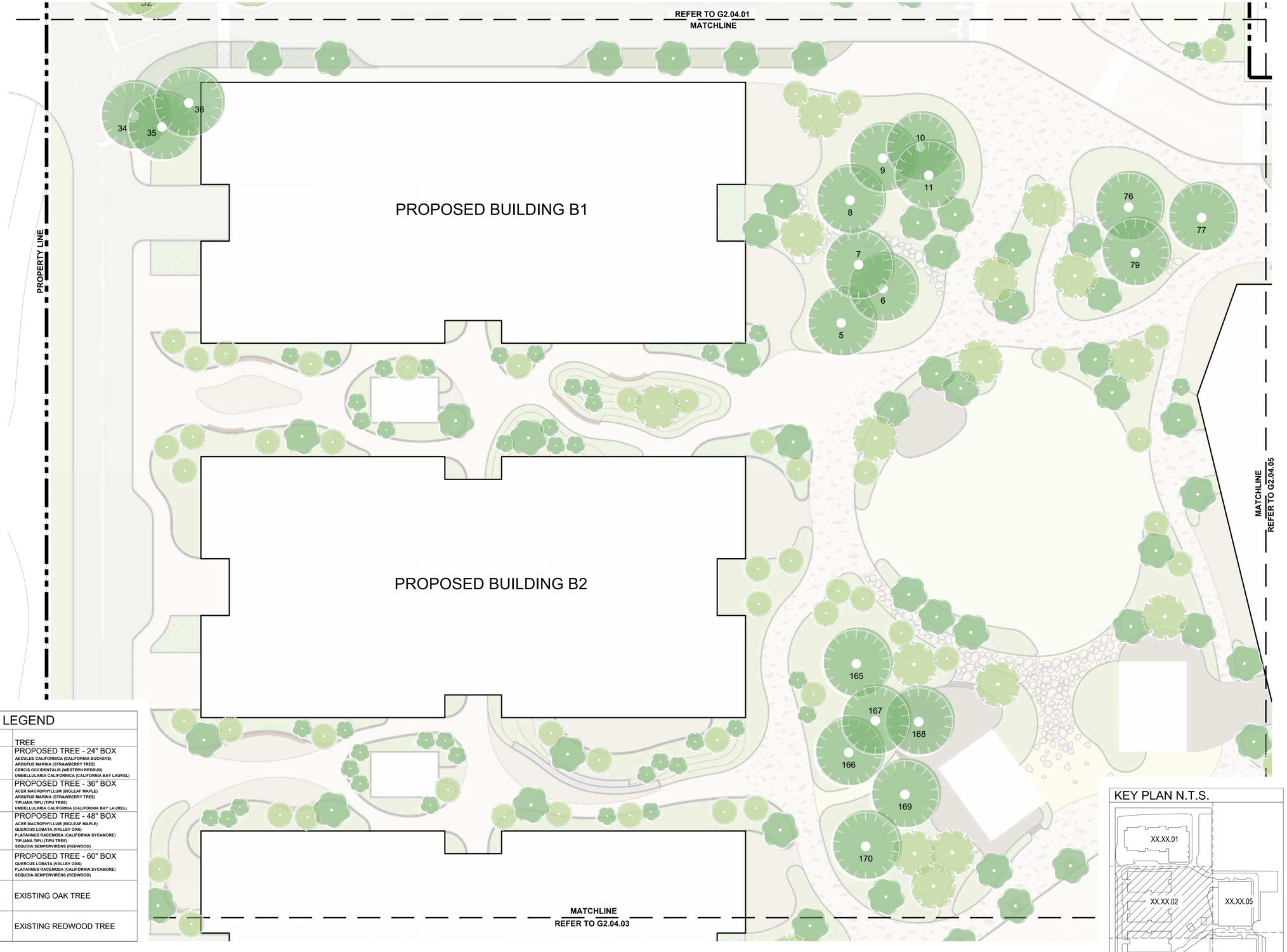
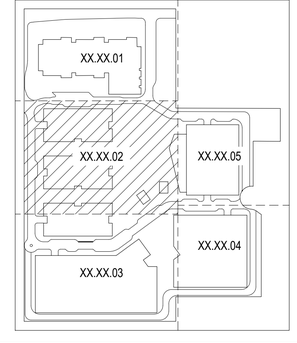


TREE LEGEND	
SYMBOL	TREE
	PROPOSED TREE - 24" BOX AECULUS CALIFORNICA (CALIFORNIA BUCKEYE) ARBUTUS MARINA (STRAWBERRY TREE) CERCIS OCCIDENTALIS (WESTERN REDBUD) UMBELLULARIA CALIFORNICA (CALIFORNIA BAY LAUREL)
	PROPOSED TREE - 36" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) ARBUTUS MARINA (STRAWBERRY TREE) TIPUANA TIPU (TIPU TREE) UMBELLULARIA CALIFORNIA (CALIFORNIA BAY LAUREL)
	PROPOSED TREE - 48" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) TIPUANA TIPU (TIPU TREE) SEQUOIA SEMPERVIRENS (REDWOOD)
	PROPOSED TREE - 60" BOX QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) SEQUOIA SEMPERVIRENS (REDWOOD)
TREE NO.	EXISTING OAK TREE
TREE NO.	EXISTING REDWOOD TREE

KEY PLAN N.T.S.



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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE REPLACEMENT PLAN
ENLARGEMENT B

Scale
1" = 20'-0"

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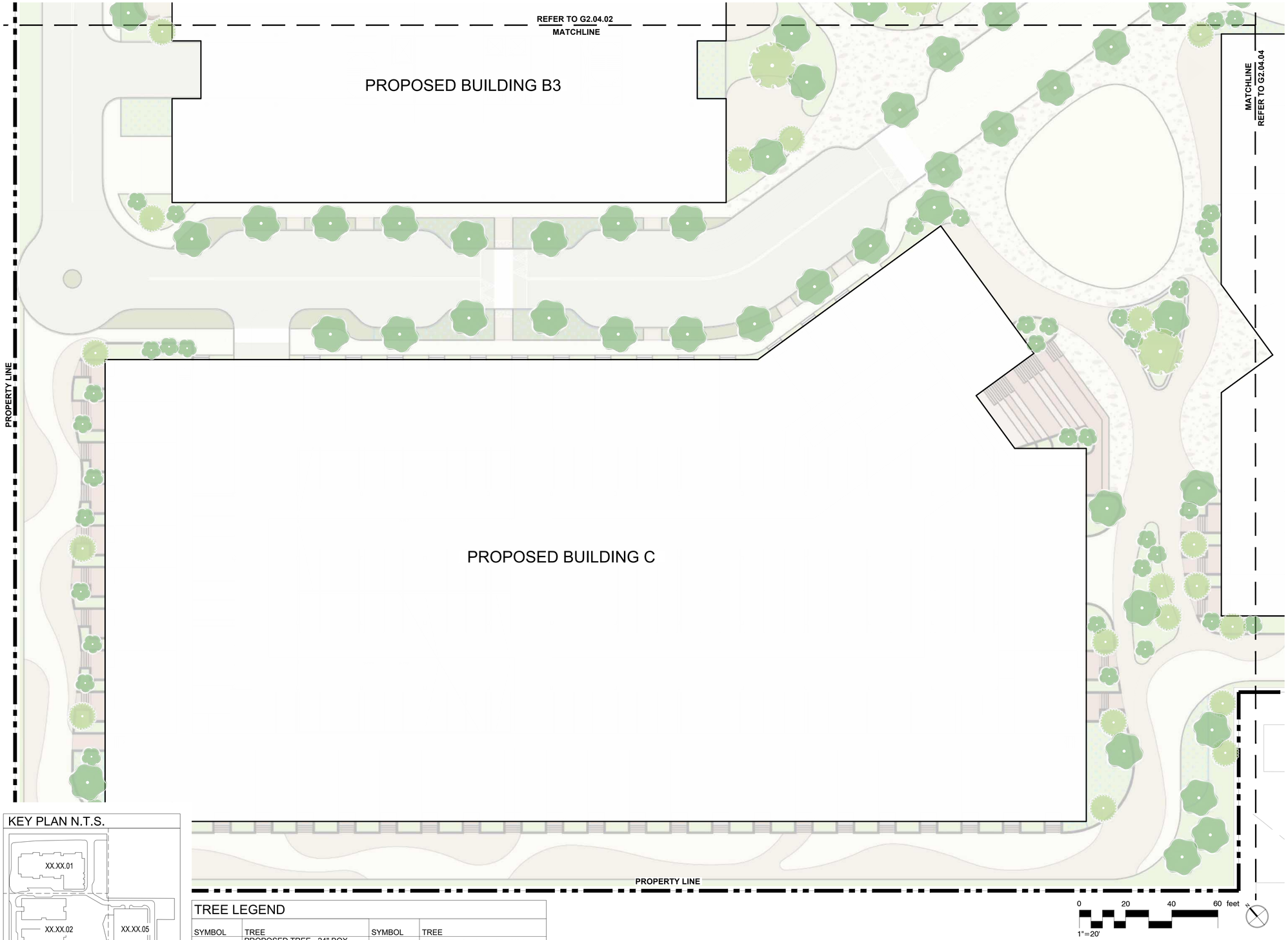
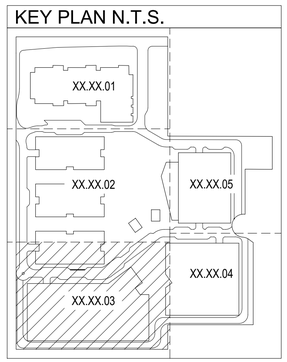


KEY PLAN N.T.S.



TREE LEGEND

SYMBOL	TREE	SYMBOL	TREE
	PROPOSED TREE - 24" BOX ACCULUS CALIFORNICA (CALIFORNIA BUCKEYE) ARBUTUS MARINA (STRAWBERRY TREE) CERCIS OCCIDENTALIS (WESTERN REDBUD) UMBELLULARIA CALIFORNICA (CALIFORNIA BAY LAUREL)		PROPOSED TREE - 60" BOX QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) SEQUOIA SEMPERVIRENS (REDWOOD)
	PROPOSED TREE - 36" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) ARBUTUS MARINA (STRAWBERRY TREE) TIPUANA TIPU (TIPU TREE) UMBELLULARIA CALIFORNIA (CALIFORNIA BAY LAUREL)	TREE NO.	EXISTING OAK TREE
	PROPOSED TREE - 48" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) TIPUANA TIPU (TIPU TREE) SEQUOIA SEMPERVIRENS (REDWOOD)	TREE NO.	EXISTING REDWOOD TREE

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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
TREE REPLACEMENT PLAN
ENLARGEMENT C

Scale
1" = 20'-0"

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TREE LEGEND	
SYMBOL	TREE
	PROPOSED TREE - 24" BOX AECULUS CALIFORNICA (CALIFORNIA BUCKEYE) ARBUTUS MARINA (STRAWBERRY TREE) CERCIS OCCIDENTALIS (WESTERN REDBUD) UMBELLULARIA CALIFORNICA (CALIFORNIA BAY LAUREL)
	PROPOSED TREE - 36" BOX ACER MACROPHYLLUM (BIGLEAF MAPLE) ARBUTUS MARINA (STRAWBERRY TREE) TIPUANA TIPU (TIPU TREE) UMBELLULARIA CALIFORNIA (CALIFORNIA BAY LAUREL)
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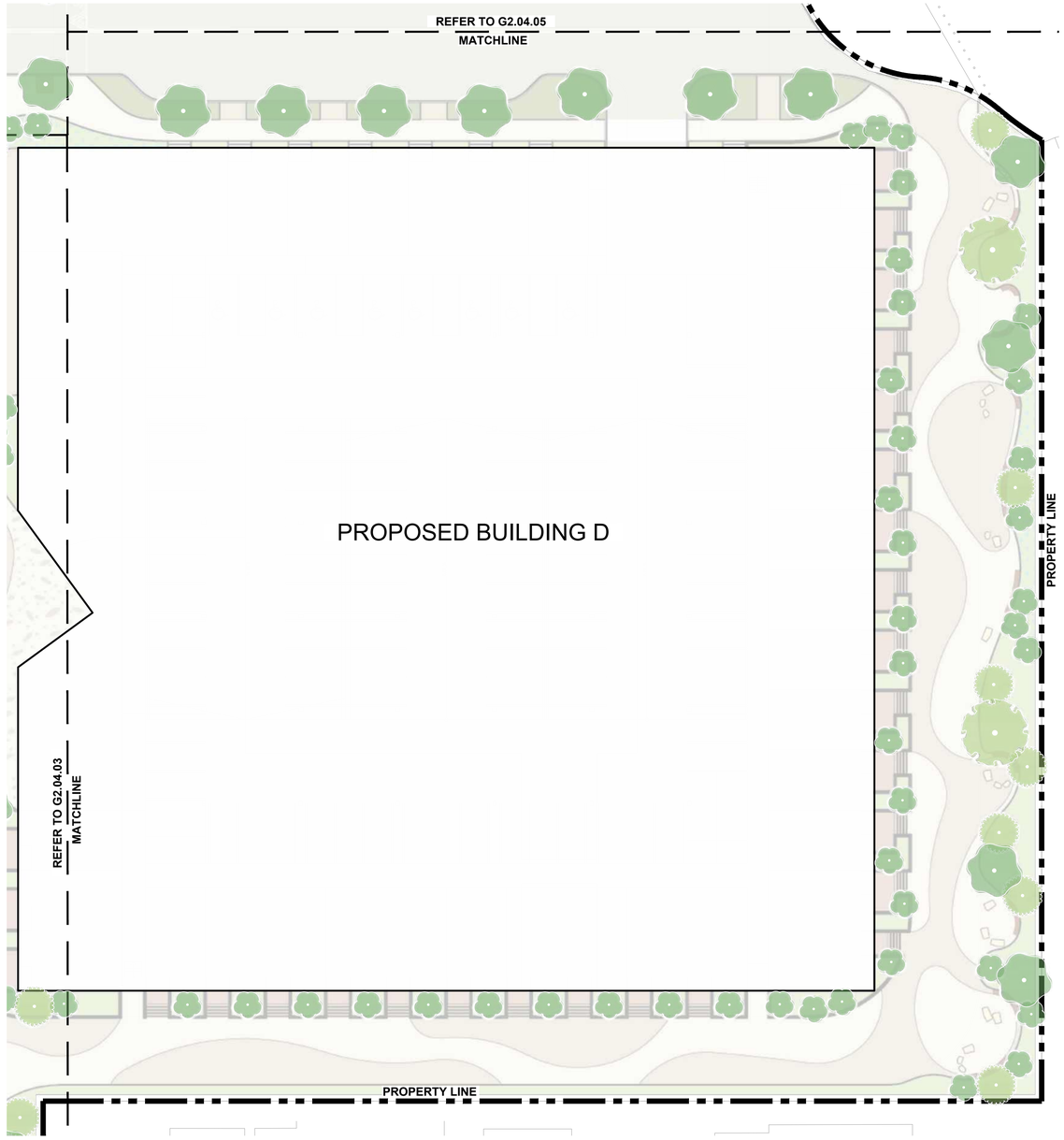
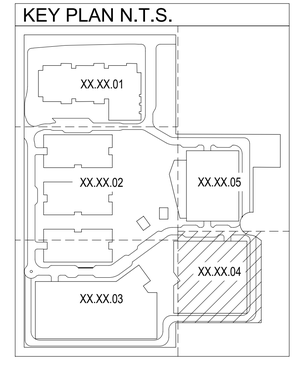
	PROPOSED TREE - 60" BOX QUERCUS LOBATA (VALLEY OAK) PLATANNUS RACEMOSA (CALIFORNIA SYCAMORE) SEQUOIA SEMPERVIRENS (REDWOOD)
TREE NO.	EXISTING OAK TREE
TREE NO.	EXISTING REDWOOD TREE



0 20 40 60 feet

1"=20'

KEY PLAN N.T.S.



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Project Name
345 MIDDLEFIELD RD

Project Number
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Description
TREE REPLACEMENT PLAN
ENLARGEMENT D

Scale
1" = 20'-0"

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TREE LEGEND

SYMBOL	TREE
	PROPOSED TREE - 24" BOX AECULUS CALIFORNICA (CALIFORNIA BUCKEYE) ARBUTUS MARINA (STRAWBERRY TREE) CERCIS OCCIDENTALIS (WESTERN REDBUD) UMBELLULARIA CALIFORNICA (CALIFORNIA BAY LAUREL)
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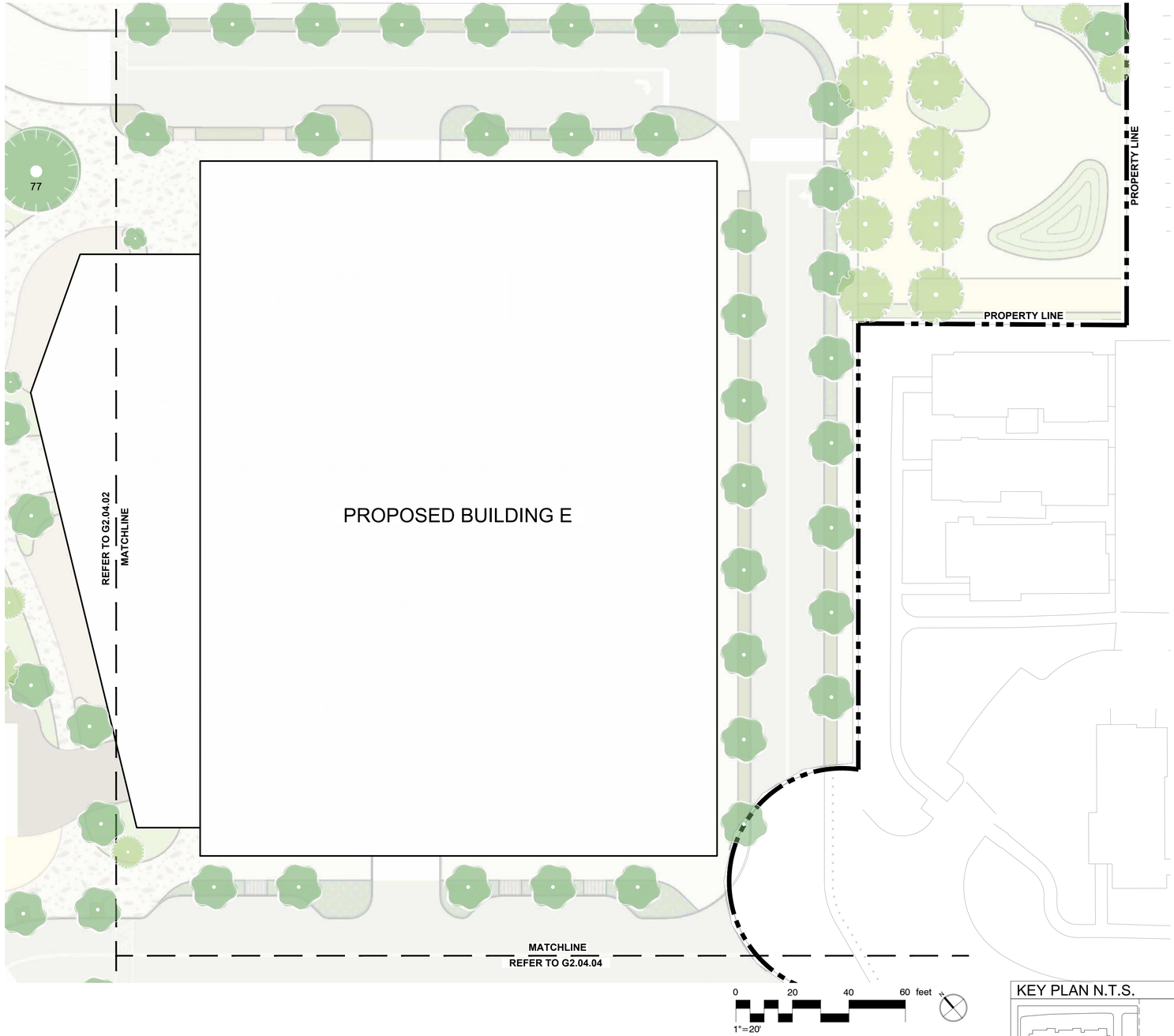
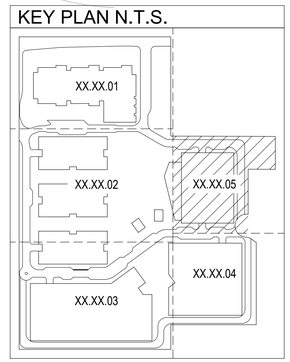
TREE NO.	EXISTING OAK TREE
TREE NO.	EXISTING REDWOOD TREE



KEY PLAN N.T.S.



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Project Name
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Project Number
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Description
TREE REPLACEMENT PLAN
ENLARGEMENT E

Scale
1" = 20'-0"

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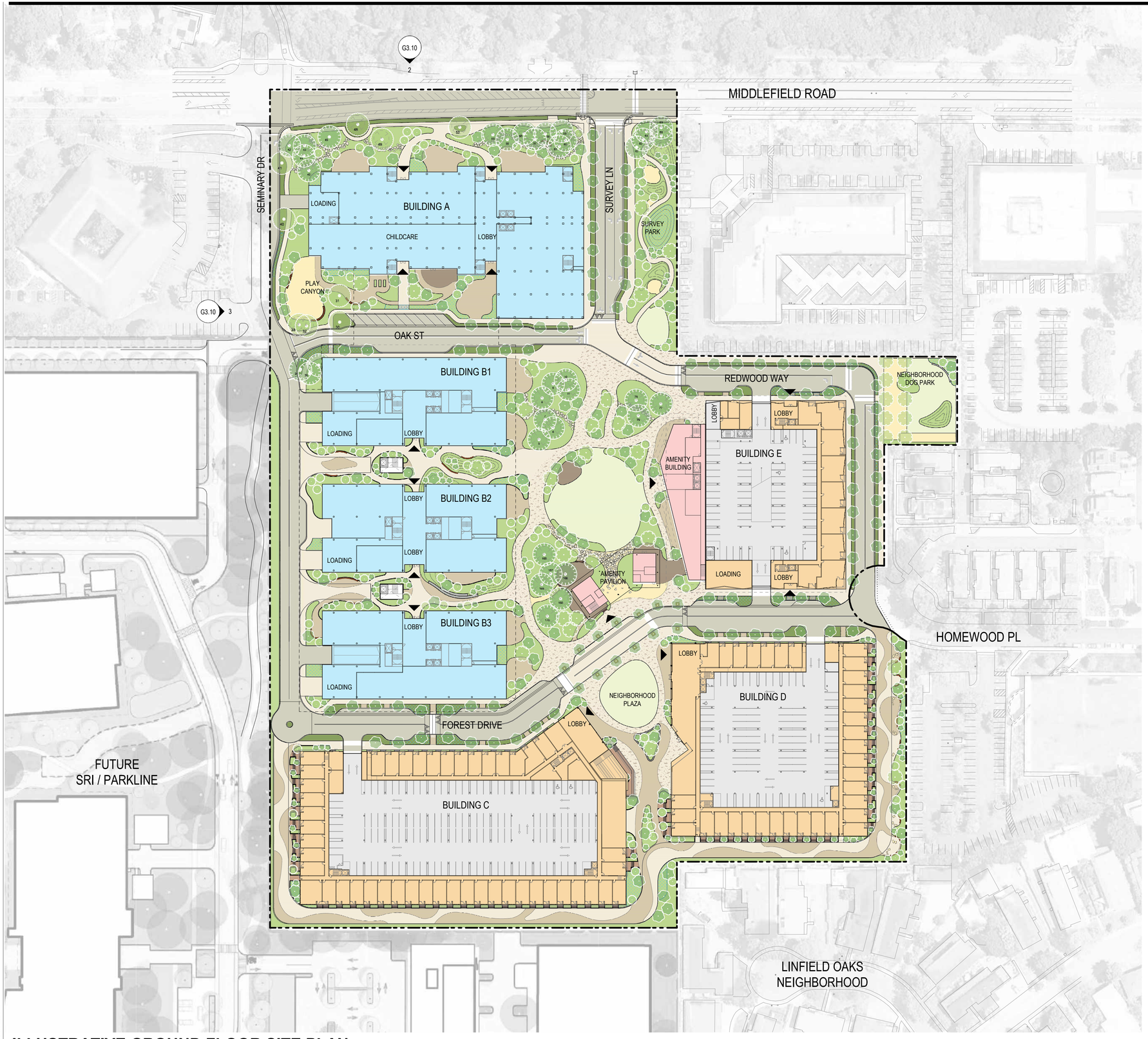

ILLUSTRATIVE GROUND FLOOR SITE PLAN

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Project Name
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Project Number
001.4474.000

Description
ILLUSTRATIVE GROUND FLOOR SITE PLAN

Scale
0' 30' 60' 120'
SCALE: 1" = 60'

G2.05

LEGEND

- BUILDING ENTRANCE
- COMMERCIAL
- RESIDENTIAL
- RETAIL / AMENITY
- PARKING

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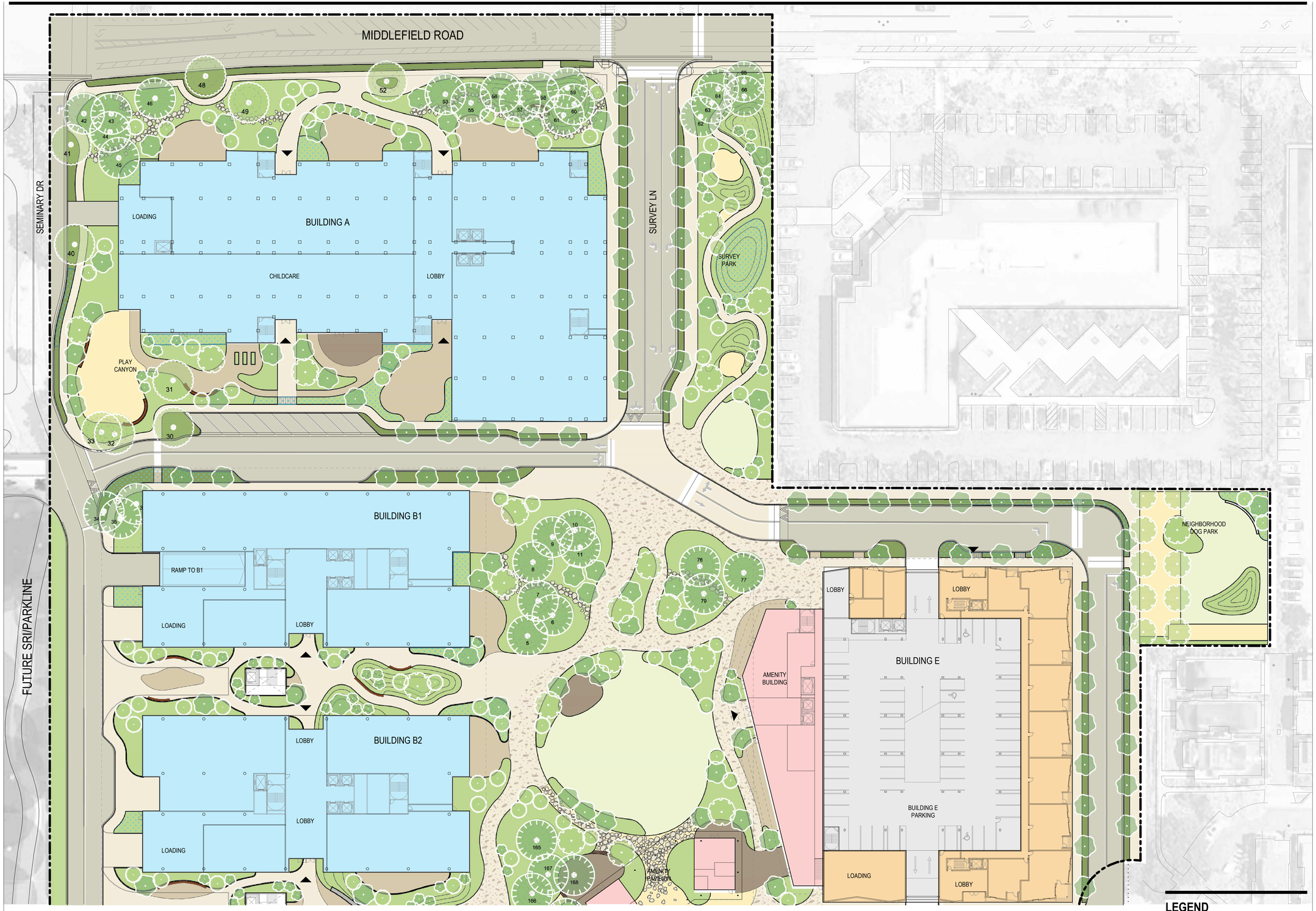

LEGEND

- BUILDING ENTRANCE
- COMMERCIAL
- RESIDENTIAL
- RETAIL / AMENITY
- PARKING

ILLUSTRATIVE GROUND FLOOR SITE PLAN - NORTH SECTOR

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Project Number
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Description
ILLUSTRATIVE GROUND FLOOR SITE PLAN - NORTH SECTOR

Scale
0' 20' 60' 100'
SCALE: 1/32" = 1'

G2.05.01

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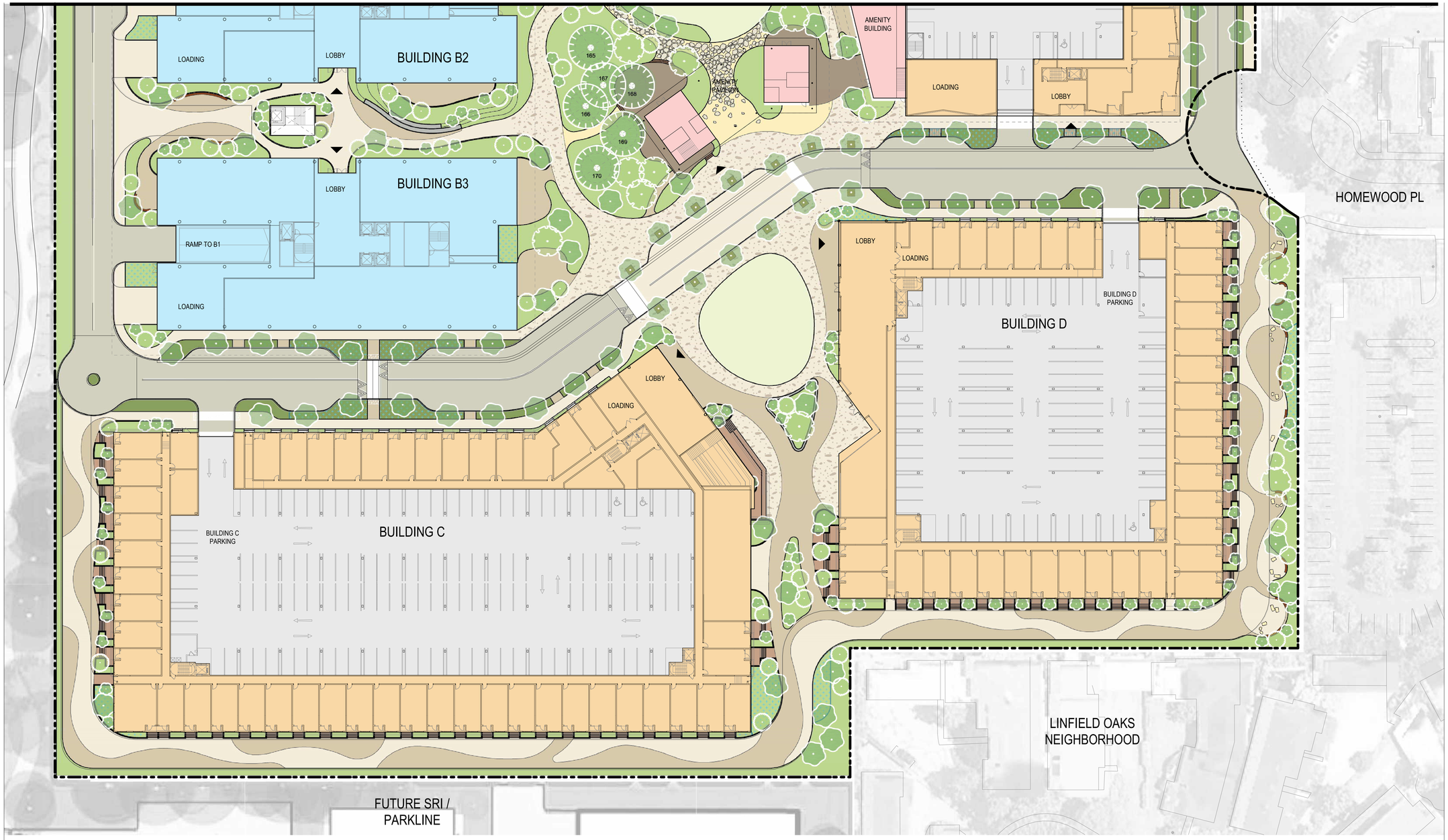

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Project Number
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Description
ILLUSTRATIVE GROUND FLOOR SITE PLAN - SOUTH SECTOR

LEGEND

- BUILDING ENTRANCE
- COMMERCIAL
- RESIDENTIAL
- RETAIL / AMENITY
- PARKING

Scale
0' 20' 60' 100'
SCALE: 1/32" = 1'

G2.05.02

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ILLUSTRATIVE GROUND FLOOR SITE PLAN - SOUTH SECTOR

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ILLUSTRATIVE SERVICE YARD AND TRANSFORMER LOCATIONS SITE PLANS

LEGEND

- LOADING DOCK ACCESS
- LOADING DOCK
- PRELIMINARY TRANSFORMER LOCATION
- PRELIMINARY SERVICE YARD LOCATION

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Project Number
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Description
ILLUSTRATIVE SERVICE YARD AND TRANSFORMER LOCATIONS SITE PLANS

Scale
0' 30' 60' 120'
SCALE: 1" = 60'

G2.06

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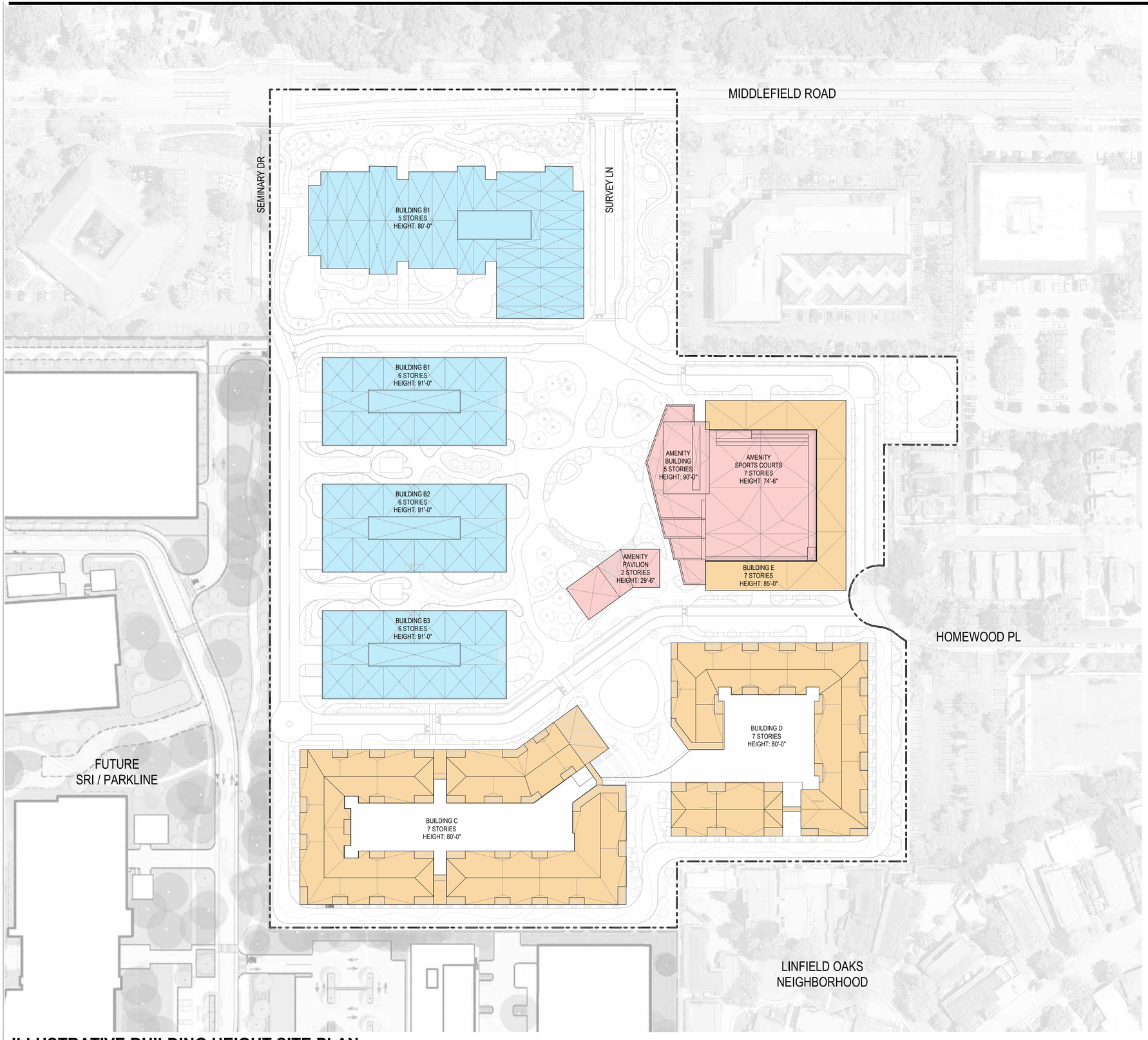

BUILDING HEIGHT SUMMARY

Building Use	Building Name	Approx. Height at T.O.P. (FT), As shown	Stories
Residential	Building C	80'-0"	7 STORIES
	Building D	80'-0"	7 STORIES
	Building E	85'-0"	7 STORIES
Commercial	Building A	80'-0"	5 STORIES
	Building B1	91'-0"	6 STORIES
	Building B2	91'-0"	6 STORIES
	Building B3	91'-0"	6 STORIES
Retail/ Amenity	Building E	90'-0"	5 STORIES
	Sportscourt	74'-6"	7 STORIES
	Pavilion	29'-6"	2 STORIES

LEGEND

- COMMERCIAL
- RESIDENTIAL
- RETAIL / AMENITY

ILLUSTRATIVE BUILDING HEIGHT SITE PLAN

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Description
ILLUSTRATIVE BUILDING HEIGHT SITE PLAN

Scale
0' 30' 60' 120'
SCALE: 1" = 60'

G2.07

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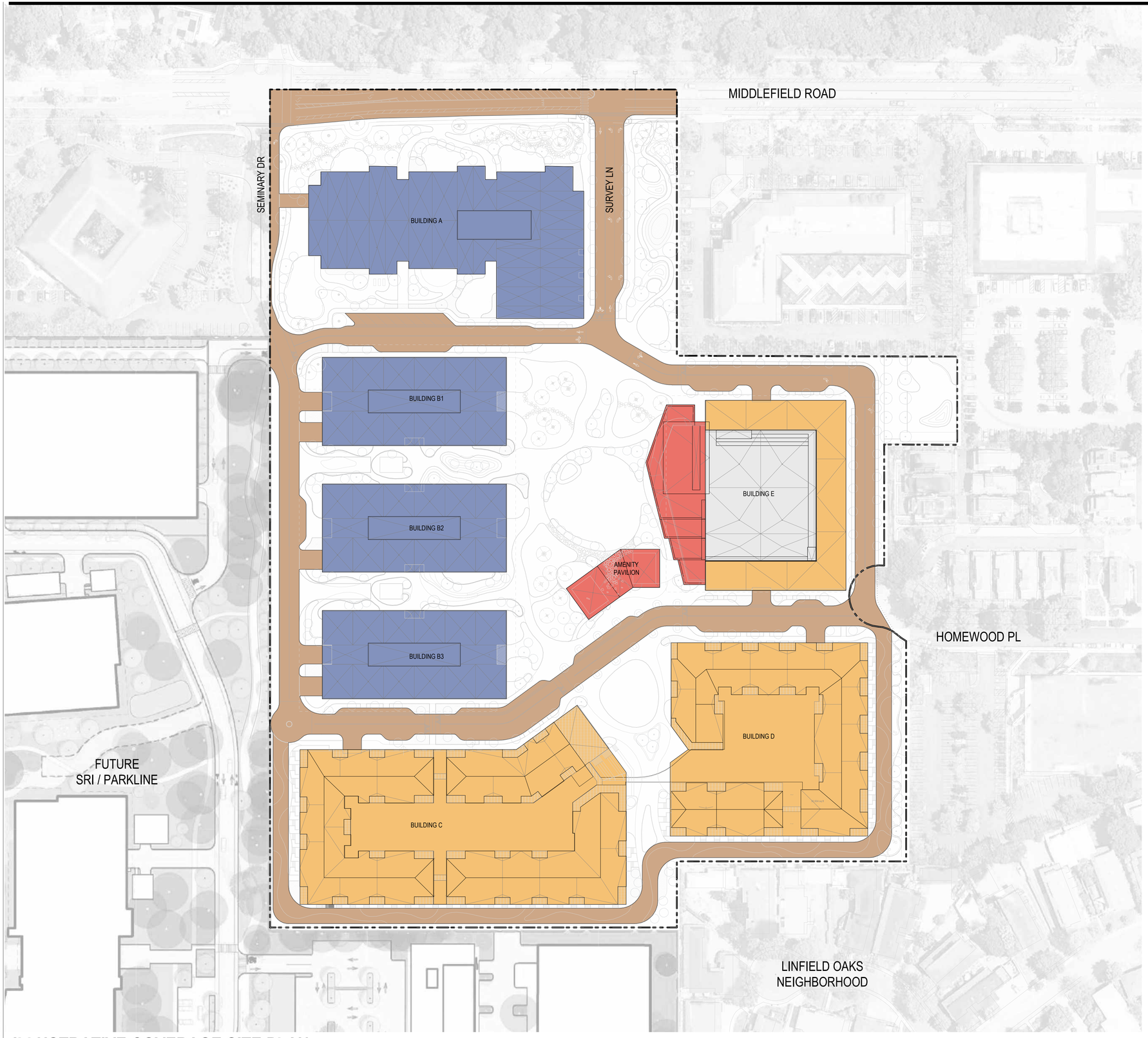

BUILDING COVERAGE SUMMARY

Building Use	Building Name	Building Coverage (SF)	Total (SF)
Residential	Building C	88,226	209,647
	Building D	63,800	
	Building E	57,621	
Commercial	Building A	52,400	135,200
	Building B1	27,600	
	Building B2	27,600	
	Building B3	27,600	
Retail / Amenity	Building E	13,250	19,590
	Pavilion	6,340	
Parking	Building E	24,000	24,000
Total Building Coverage			388,437
Total Site Area			773,073
Total Building Coverage %			50%
Vehicular Paving	-	138,800	138,800

LEGEND

- COMMERCIAL COVERAGE
- RESIDENTIAL COVERAGE
- RETAIL / AMENITY COVERAGE
- PARKING COVERAGE
- STREET COVERAGE

ILLUSTRATIVE COVERAGE SITE PLAN

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Description
ILLUSTRATIVE COVERAGE SITE PLAN

Scale
0' 30' 60' 120'
SCALE: 1" = 60'

G2.08

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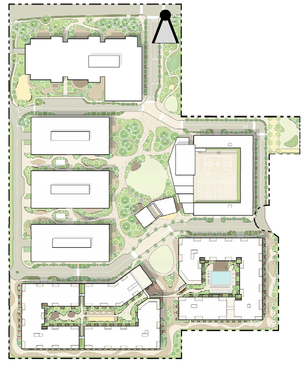
PEDESTRIAN PERSPECTIVE FROM MIDDLEFIELD ROAD ACROSS SURVEY PARK AND SURVEY LANE WITH COMMERCIAL BUILDING 'A' IN BACKGROUND.



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Description
ILLUSTRATIVE VIEWS - MIDDLEFIELD ROAD GATEWAY

Scale
NOT TO SCALE

G3.00

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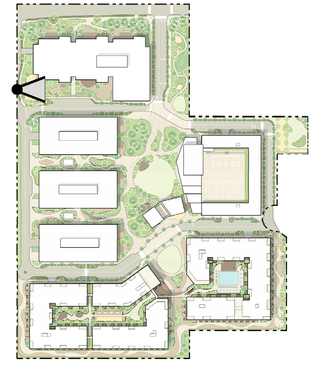
PEDESTRIAN PERSPECTIVE FROM SEMINARY DRIVE ON PLAY CANYON WITH COMMERCIAL BUILDING 'A' ON THE LEFT AND COMMERCIAL BUILDING 'B1' ON THE RIGHT.



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Project Number
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Description
ILLUSTRATIVE VIEWS - CHILDCARE PLAY CANYON

Scale

G3.01

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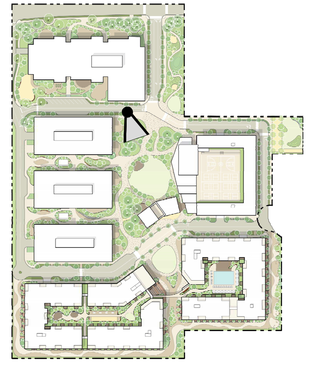
PEDESTRIAN PERSPECTIVE FROM 'REDWOOD MEADOW' WITH AMENITY BUILDING 'E' ON THE LEFT, AMENITY PAVILION AND THE RESIDENTIAL BUILDING 'D' IN THE BACK.



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Description
ILLUSTRATIVE VIEWS - REDWOOD GATEWAY

Scale

G3.02

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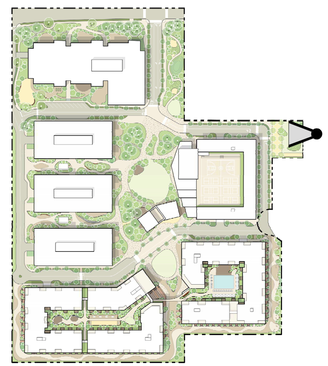
PEDESTRIAN PERSPECTIVE OF 'NEIGHBORHOOD DOG PARK',
WITH RESIDENTIAL BUILDING 'E' IN THE BACKGROUND.



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Project Number
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Description
ILLUSTRATIVE VIEWS - NEIGHBORHOOD DOG PARK

Scale

G3.03

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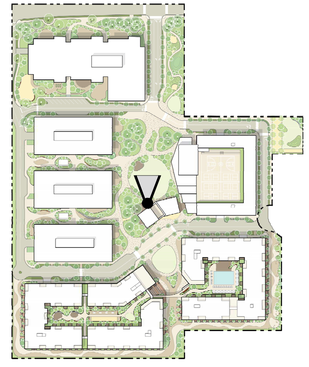
PEDESTRIAN PERSPECTIVE FROM 'AMENITY PAVILION', LOOKING INTO THE 'REDWOOD MEADOW', WITH COMMERCIAL BUILDING 'B1' ON THE LEFT, COMMERCIAL BUILDING 'A' IN THE BACKGROUND, AND THE AMENITY BUILDING 'E' ON THE RIGHT.



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Description
ILLUSTRATIVE VIEWS - REDWOOD MEADOW

Scale

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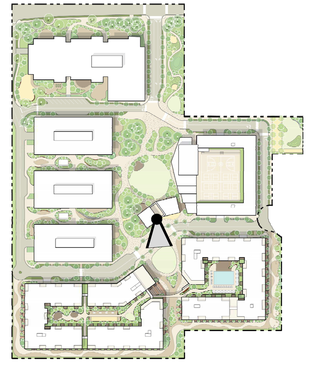
PERSPECTIVE FROM 'AMENITY PAVILION' TOWARDS THE 'NEIGHBOR'S PLAZA'
WITH RESIDENTIAL BUILDINGS 'C' AND 'D'



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Project Number
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Description
ILLUSTRATIVE VIEWS - NEIGHBOR'S PLAZA

Scale

G3.05

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EXISTING MIDDLEFIELD ROAD STREETSCAPE ELEVATION

PROPOSED MIDDLEFIELD ROARD STREETSCAPE ELEVATION

EXISTING SEMINARY DRIVE STREETSCAPE ELEVATION

PROPOSED SEMINARY DRIVE STREETSCAPE ELEVATION

GENERAL NOTES

1. THE MIDDLEFIELD ROAD FRONTAGE IS THE PROJECT'S PRIMARY PUBLIC STREETSCAPE AND SHALL BE DESIGNED AND CONSTRUCTED TO MEET OR EXCEED ALL APPLICABLE CITY OF MENLO PARK STANDARDS, GUIDELINES, AND CONDITIONS OF APPROVAL, INCLUDING BUT NOT LIMITED TO REQUIREMENTS FOR FRONTAGE IMPROVEMENTS, LANDSCAPING, LIGHTING, ACCESSIBILITY, AND SAFETY.

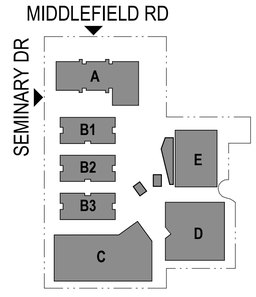
2. STREETSCAPE ELEMENTS ALONG MIDDLEFIELD ROAD—INCLUDING SIDEWALKS, FURNISHING ZONES, STREET TREES, UNDERSTORY PLANTING, LIGHTING, FURNISHINGS, BICYCLE FACILITIES, AND CURB RAMPS—SHALL BE COORDINATED WITH CITY STANDARDS AND ADJACENT PUBLIC IMPROVEMENTS TO PROVIDE A CONTINUOUS, ACCESSIBLE, AND SAFE PEDESTRIAN EXPERIENCE.

3. GROUND-FLOOR FRONTAGES ALONG MIDDLEFIELD ROAD SHALL MAXIMIZE TRANSPARENCY AND ACTIVE USES WHERE REQUIRED BY ZONING AND DESIGN GUIDELINES, WITH GLAZING, DOOR LOCATIONS, AND FAÇADE ARTICULATION GENERALLY CONSISTENT WITH THE APPROVED ELEVATIONS. BLANK WALLS AND INACTIVE FRONTAGES SHALL BE MINIMIZED AND TREATED WITH ARCHITECTURAL DETAILING, LANDSCAPE, OR PUBLIC ART WHERE APPROPRIATE.

4. ROOFTOP AND GROUND-MOUNTED MECHANICAL EQUIPMENT, METERS, AND SERVICE ELEMENTS VISIBLE FROM MIDDLEFIELD ROAD SHALL BE SCREENED AND INTEGRATED INTO THE ARCHITECTURAL AND LANDSCAPE DESIGN TO THE GREATEST EXTENT FEASIBLE, IN COMPLIANCE WITH CITY REQUIREMENTS.

5. FINAL COORDINATION OF GRADING, UTILITY LOCATIONS, TREE PLACEMENT, LIGHTING, AND STREET FURNISHINGS WITHIN THE MIDDLEFIELD ROAD RIGHT-OF-WAY AND FRONTAGE ZONE SHALL BE COMPLETED IN CONSULTATION WITH CITY STAFF AND UTILITY PROVIDERS, AND IS SUBJECT TO THEIR REVIEW AND APPROVAL PRIOR TO ISSUANCE OF PERMITS AND CONSTRUCTION IN THE PUBLIC REALM.

KEY PLAN



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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD REIMAGINED

Project Number
001.4474.000

Description
EXISTING AND PROPOSED STREETSCAPE ELEVATIONS

Scale
0' 20' 60' 100'
SCALE: 1/32" = 1'

G3.10

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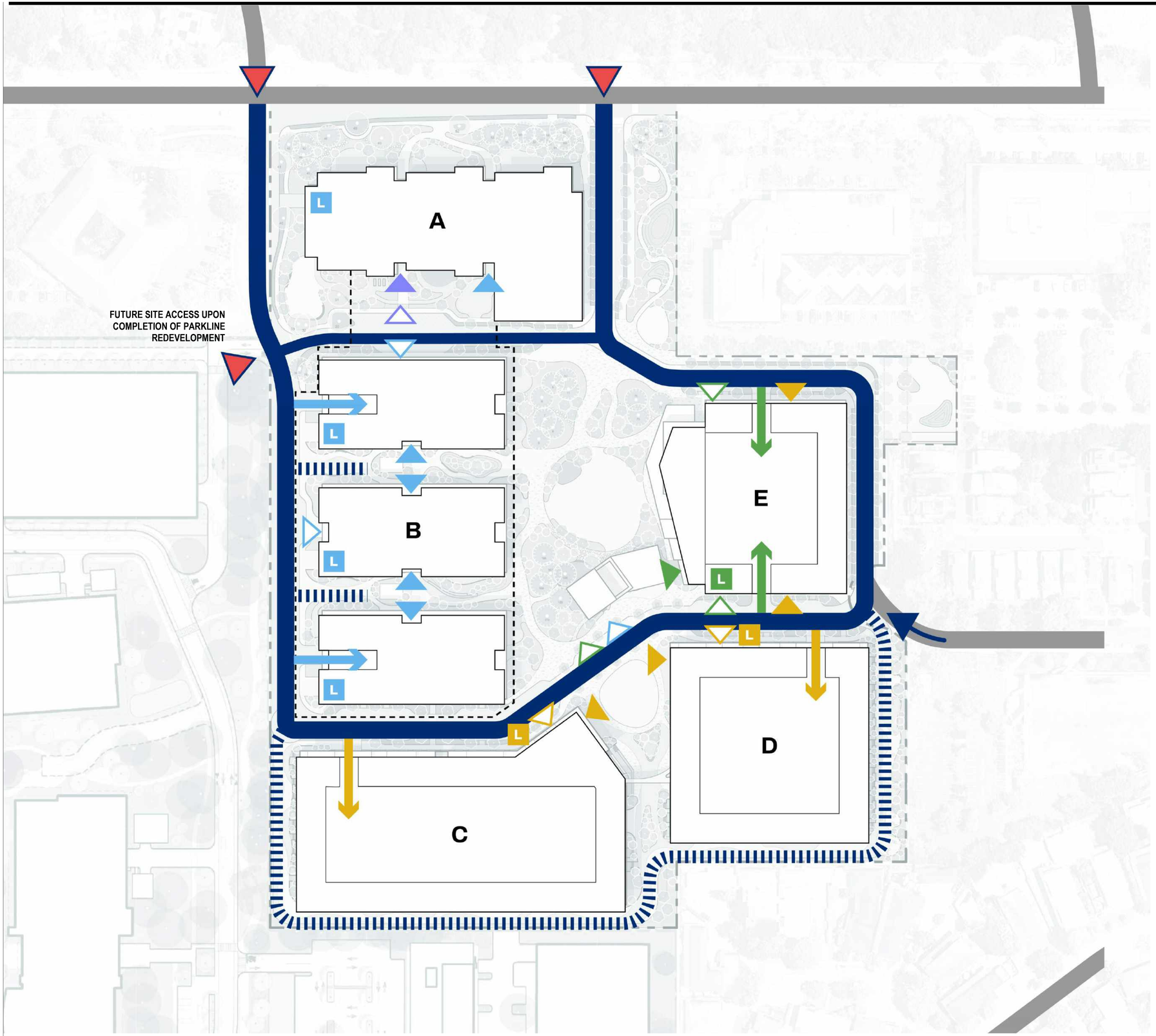

ILLUSTRATIVE VEHICULAR CIRCULATION AND PARKING ACCESS

LEGEND

- EXISTING VEHICULAR ROUTE
- PRIMARY VEHICULAR ROUTE
- SECONDARY VEHICULAR ROUTE
- EMERGENCY VEHICLE AND FIRE ACCESS LANE
- BELOW GRADE GARAGE FOOTPRINT
- SITE ACCESS
- EMERGENCY SITE ACCESS ONLY
- OFFICE BELOW GRADE PARKING ENTRANCE
- RESIDENTIAL STRUCTURED PARKING ENTRANCE
- MIXED USE STRUCTURED PARKING ENTRANCE
- OFFICE MAIN ENTRANCE
- RESIDENTIAL MAIN ENTRY
- MIXED USE MAIN ENTRY
- CHILDCARE MAIN ENTRY
- OFFICE PASSENGER DROP-OFF / RIDESHARE / DELIVERY / SHORT-TERM PARKING ENTRY
- RESIDENTIAL PASSENGER DROP-OFF / RIDESHARE / DELIVERY / SHORT-TERM PARKING ENTRY
- MIXED USE PASSENGER DROP-OFF / RIDESHARE / DELIVERY / SHORT-TERM PARKING ENTRY
- CHILDCARE PASSENGER DROP-OFF / RIDESHARE / DELIVERY / SHORT-TERM PARKING ENTRY
- OFFICE LOADING
- RESIDENTIAL LOADING
- MIXED USE LOADING

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Description
ILLUSTRATIVE VEHICULAR CIRCULATION AND SITE ACCESS

Scale

G4.00

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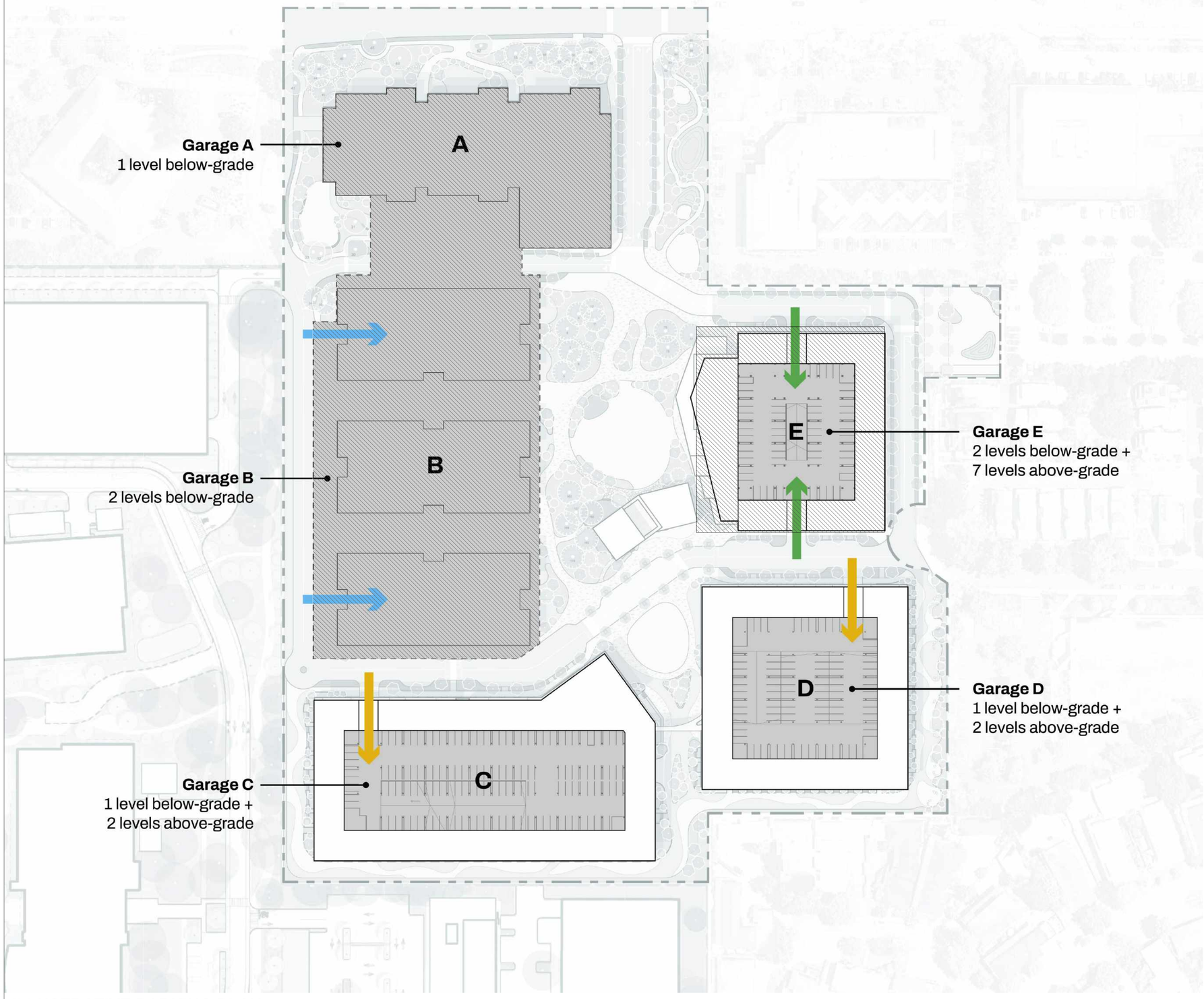

PARKING SUMMARY

Building Use	Building Name	Parking Stalls Provided	Total (Stalls)
Residential	Building C	372	804
	Building D	210	
	Building E	222	
RESIDENTIAL TOTAL PARKING			804
Commercial	Building A	1,221	1,693
	Building B1		
	Building B2		
	Building B3		
	Building E	472	
Retail / Amenity	Building E	132	142
	Street Parking	10	
COMMERCIAL/NON-RESIDENTIAL TOTAL PARKING			1,835
TOTAL PARKING			2,639

LEGEND

- PARKING GARAGE
- BELOW GRADE PARKING
- OFFICE BELOW GRADE PARKING GARAGE ENTRANCE
- RESIDENTIAL STRUCTURED PARKING GARAGE ENTRANCE
- MIXED USE STRUCTURED PARKING GARAGE ENTRANCE

ILLUSTRATIVE PARKING PLAN

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Description
ILLUSTRATIVE PARKING PLAN

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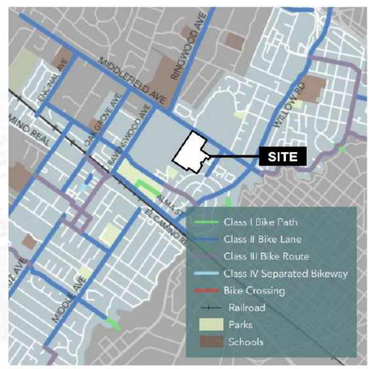

City of Menlo Park Bicycle Facilities Map (2024)

LEGEND

- PROPOSED CLASS I BIKE PATH
- EXISTING CLASS II BIKE LANE
- PROPOSED CLASS III BIKE ROUTE
- LONG TERM BICYCLE PARKING
- SHORT TERM BICYCLE PARKING

ILLUSTRATIVE BICYCLE CIRCULATION

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Description
ILLUSTRATIVE BICYCLE CIRCULATION

Scale

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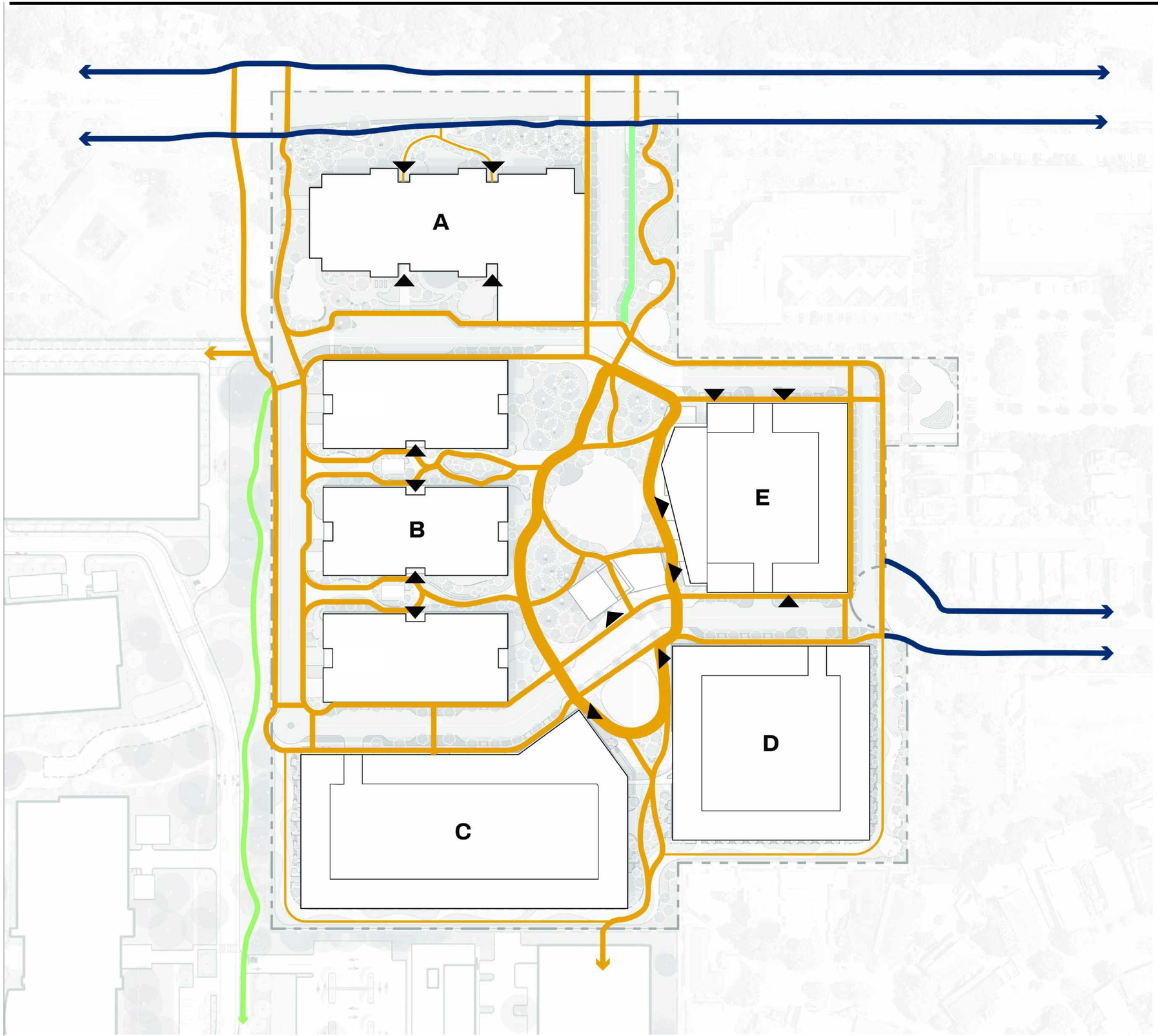

LEGEND

- EXISTING PEDESTRIAN CIRCULATION
- PROPOSED CLASS I SHARED USE PATH - SHARED USE PATH IS FOR BOTH PEDESTRIAN AND BICYCLE
- PROPOSED PRIMARY PEDESTRIAN CIRCULATION
- PROPOSED SECONDARY PEDESTRIAN CIRCULATION
- PROPOSED TERTIARY PEDESTRIAN CIRCULATION
- BUILDING ENTRANCE

ILLUSTRATIVE PEDESTRIAN CIRCULATION

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Project Number
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Description
ILLUSTRATIVE PEDESTRIAN CIRCULATION

Scale

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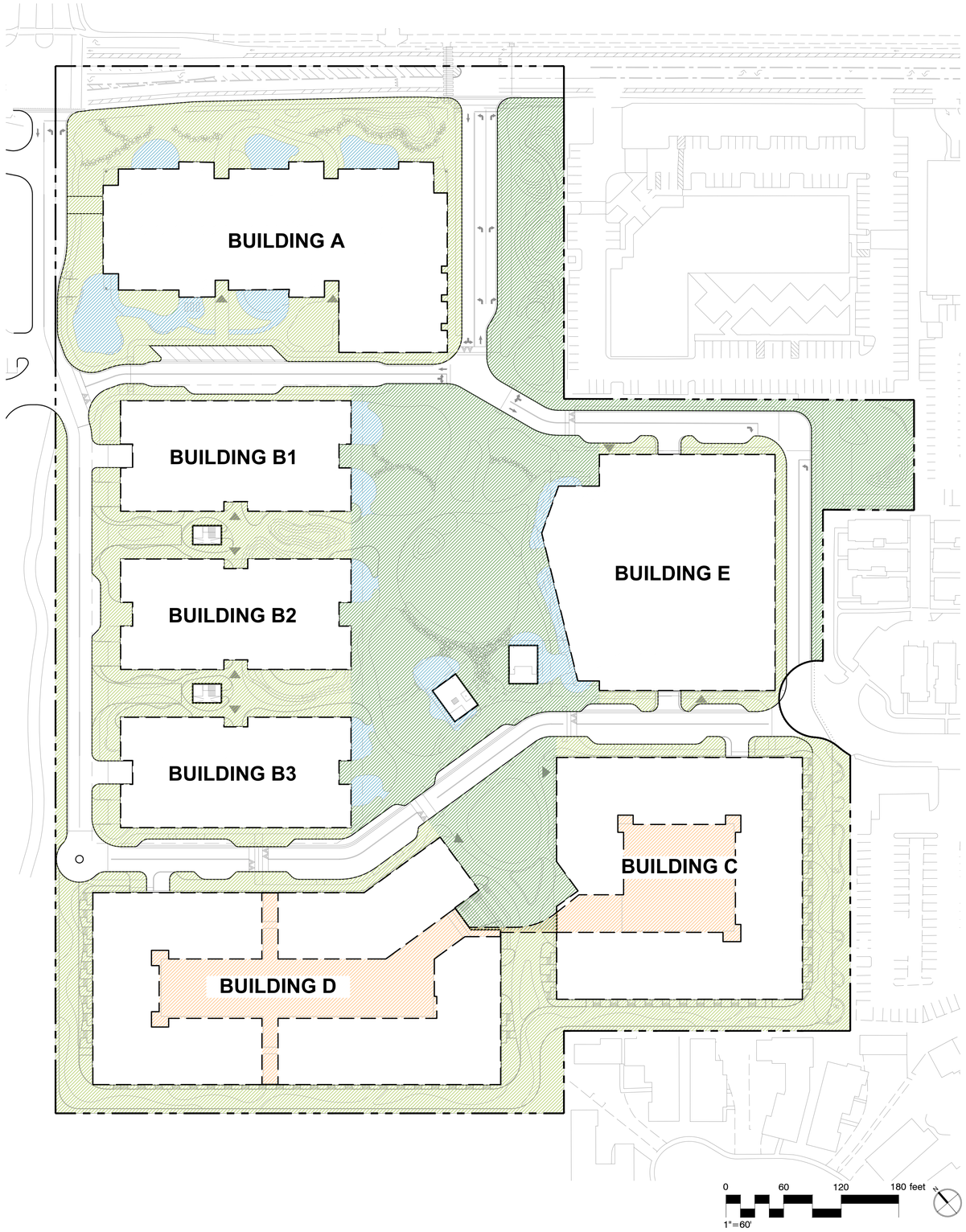

OPEN SPACE LEGEND

- PUBLICLY ACCESSIBLE OPEN SPACE
- GENERAL OPEN SPACE
- PRIVATE OPEN SPACE
- TERRACE OPEN SPACE

OPEN SPACE CALCULATIONS

OPEN SPACE REQUIRED (30% OF SITE AREA)	*= 231,921 SF / 5.32 AC*
OPEN SPACE PROVIDED	**= 263,121 SF / 6.04 AC**
PUBLICLY ACCESSIBLE OPEN SPACE REQUIRED (50% OF OPEN SPACE)	*= 131,560 SF / 3.02 AC*
PUBLICLY ACCESSIBLE OPEN SPACE PROVIDED	**= 131,777 SF / 3.02 AC**
GENERAL OPEN SPACE PROVIDED	= 68,900 SF / 1.58 AC
PRIVATE OPEN SPACE PROVIDED	= 22,613 SF / 0.51 AC
TERRACE OPEN SPACE PROVIDED	= 39,829 SF / 0.91 AC

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Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
ILLUSTRATIVE OPEN SPACE PLAN

Scale
1" = 60'-0"

L1.00

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LEGEND

1. Canopy Trail
2. Play Canyon
3. Survey Park
4. Redwood Gateway
5. Neighborhood Dog Park
6. Garden Node
7. Redwood Meadow
8. Amenity Pavilion
9. Neighbor's Plaza
10. Greenway

BUILDING PROGRAM

- Office
- Residential
- Amenity

Notes:

The 345 Middlefield project reimagines the public realm as a vibrant, flexible destination at the center of a new mixed-use district. The open spaces create a connected network that supports retail, community life, and daily gathering. Together they are the "Forest at Menlo."

The project will include publicly accessible event lawns, nature paths, dog parks and other open spaces. The public park and open spaces at 345 Middlefield will provide opportunities for a variety of activities, age groups, and user groups that serve the Menlo Park community, and are designed with five key principles in mind:

Public and Welcoming: Open spaces are public and welcoming to all. The larger open spaces are designed to host regular events and programming for the public to enjoy. The public will also be welcome to use all open spaces outside of scheduled events.

Cohesive Open Space Network: Open spaces will feel part of a cohesive network, even when crossing a street or moving between blocks and character areas.

Variety of Scales and Uses: The open space network will include diverse uses and experiences for neighbors and residents of all ages and abilities.

Integrated Infrastructure: Landscape function and infrastructure needs will be cohesively designed and integrated. Stormwater treatment, easements, and emergency access are grouped and combined wherever possible, and seamlessly integrated into the open space network.

Play and Work Out Along the Way: Play is embedded throughout the site as a continuous layer woven into circulation routes, integrated into art pieces or tucked into terraced steps. These elements are multifunctional, blending sculpture, seating and play for all ages. Around the perimeter streets, a series of fitness pods form a movement circuit that encourages walking, stretching, and light exercise, offering residents and office workers everyday amounts of wellness and activity into the landscape.

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Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
LANDSCAPE CONCEPT PLAN

Scale
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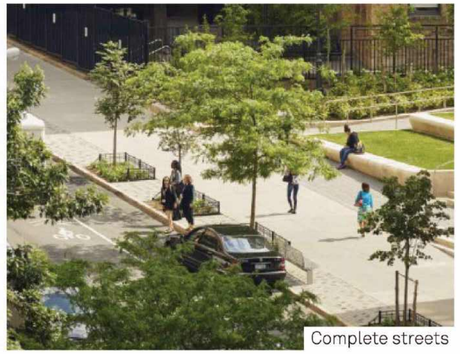
Garden nodes

Nature play & site furnishings

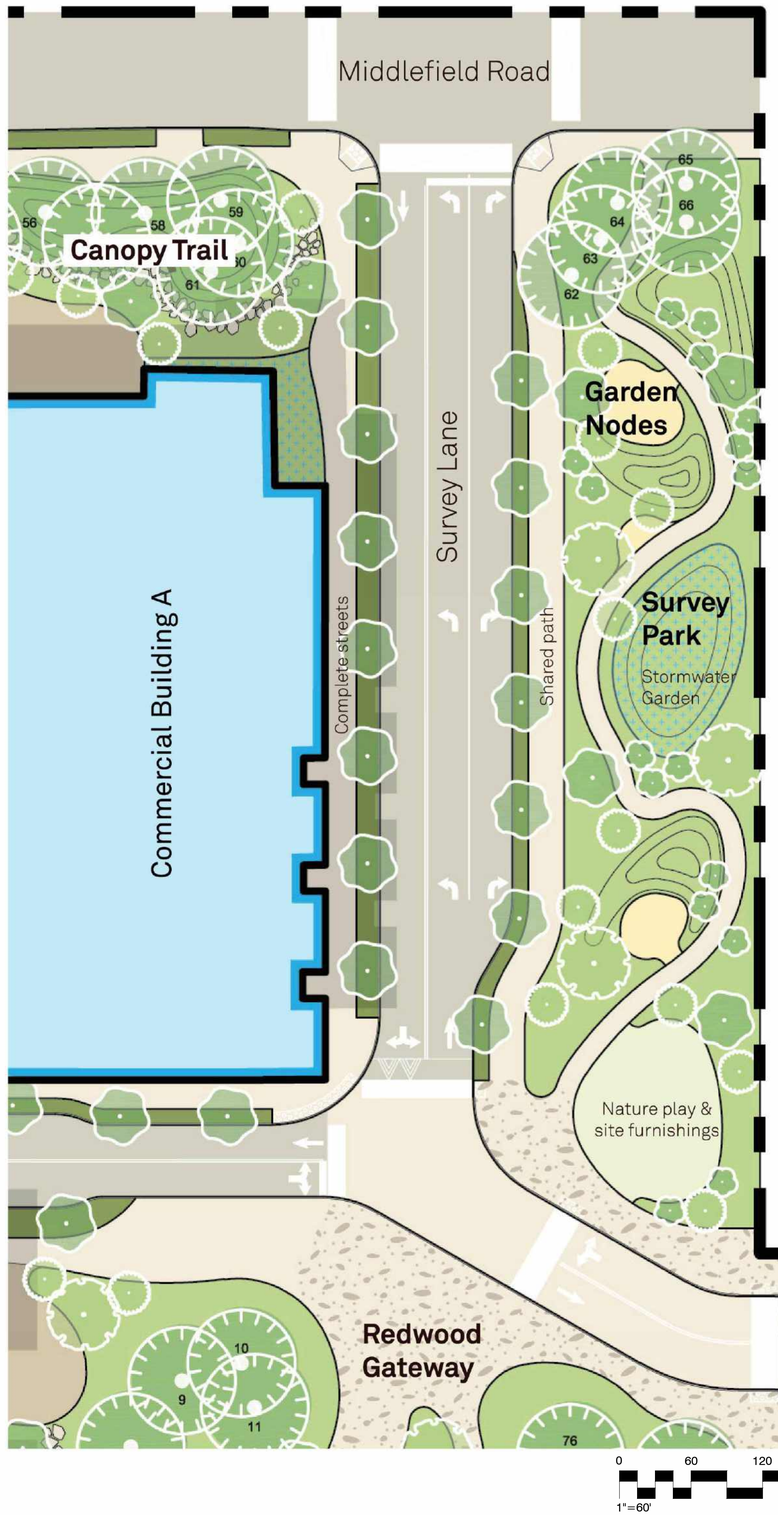
Stormwater garden



Complete streets

Canopy Trail

Seating and planting along shared paths



Canopy Trail: The Canopy Trail is envisioned as the prominently public, pedestrian-friendly edge of 345 Middlefield along Middlefield Road, offering neighbors a comfortable walking experience set back from the busy roadway beneath an expansive tree canopy and lush native plantings. It also functions as a visual and acoustic buffer, improving comfort for residents, tenants, and visitors throughout the site.

Survey Park: Survey Park establishes the primary arrival experience into the Forest at Menlo, a green, welcoming spine framed by resilient redwoods and other native plantings. It creates a strong sense of entry, guiding visitors along a shaded, pedestrian-oriented corridor that connects the heart of the site to adjoining city bike facilities and multi-use paths.

Redwood Gateway and Lawn: The Redwood Gateway announces the heart of the Forest, creating a dramatic transition from Middlefield Road into the Redwood Lawn beyond. Towering redwoods provide shade, conversational seating, and a natural frame for the Lawn, which serves as the social core of the site, supporting outdoor events, performances, informal gatherings, and daily neighborhood use.

Garden Nodes: Distributed throughout the site, the Garden Nodes punctuate the landscape with smaller-scale spaces for intimacy, play, and respite. These areas can accommodate activities such as chess, ping-pong, and resident gardens beneath trellised planting, inviting people to pause, interact, and connect within the larger public realm.

Retail and Streetscape Character: Streets and sidewalks at 345 Middlefield are designed to be comfortable for pedestrians and cyclists, with street trees selected from the Menlo Park street tree list to create shade, enclosure, and a buffer from traffic. Seating areas, tree canopies, and trellised structures support indoor–outdoor experiences for ground-floor retail, restaurants, and cafés, enabling vibrant outdoor dining and social spaces along the streetscape.

GENERAL DESIGN PRECEDENT NOTES

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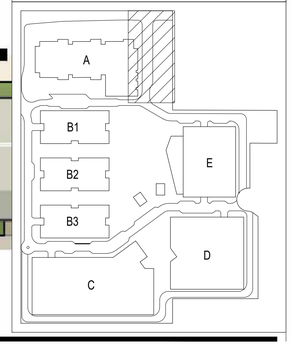
3. The images are used to illustrate general ideas about scale, façade articulation, ground-floor transparency, frontage design, and public-realm relationships along Middlefield Road and internal streets. They do not represent final building heights, exact proportions, or specific material palettes.

KEY PLAN



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01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
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Description
ENLARGEMENT PLAN - SECTOR 1

Scale
1" = 20'-0"

L1.01.01

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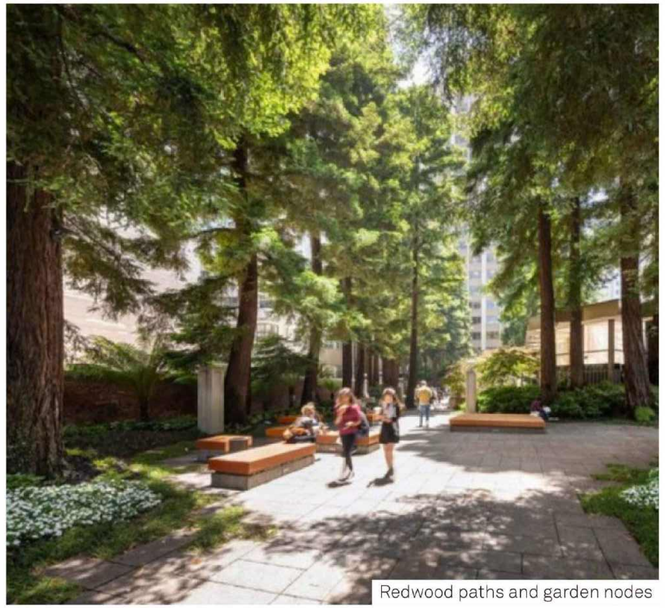
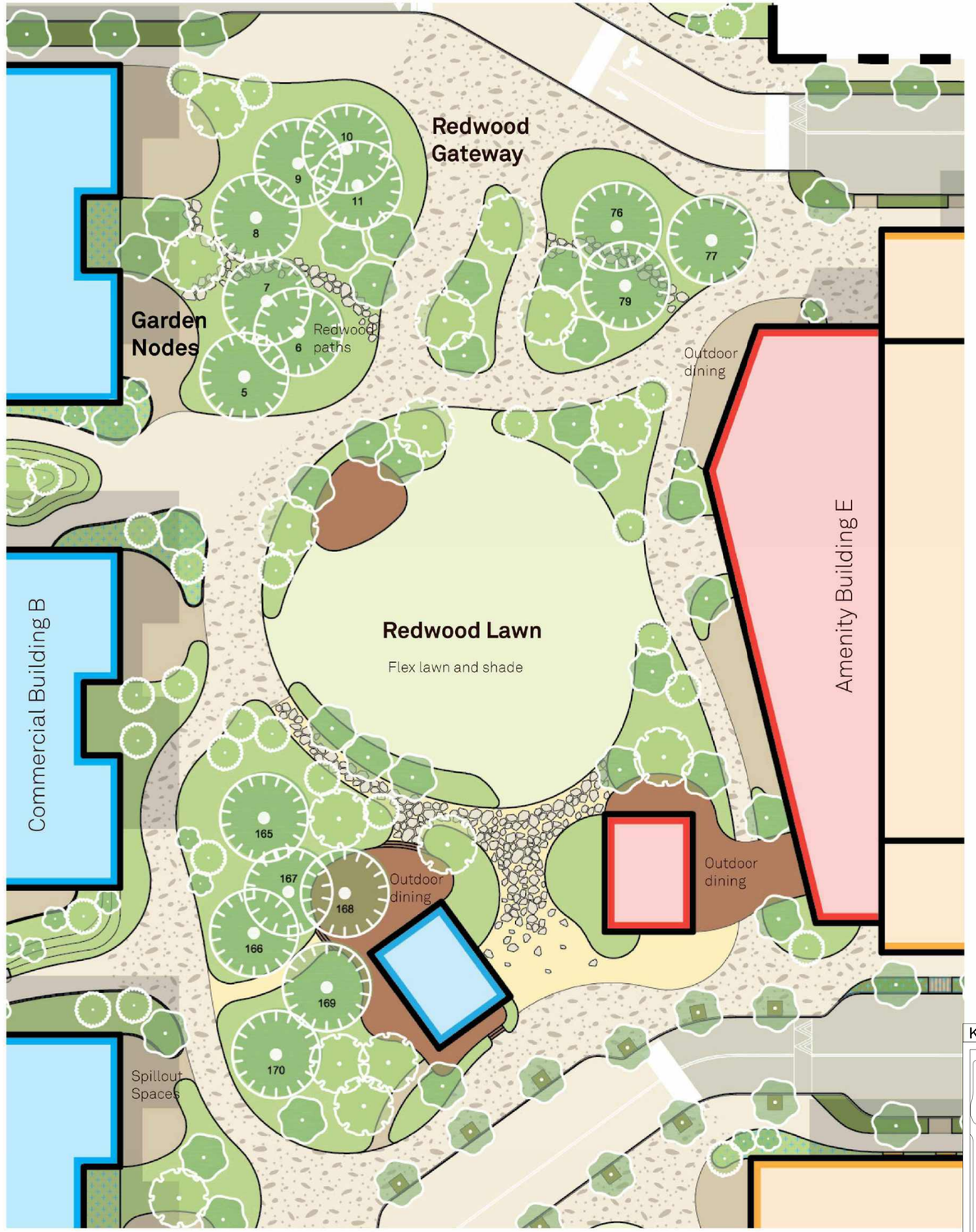


Redwood paths and garden nodes

Flex lawn and shade

Outdoor dining under canopy



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Garden Nodes: Distributed throughout the site, the Garden Nodes punctuate the landscape with smaller-scale spaces for intimacy, play, and respite. These areas can accommodate activities such as chess, ping-pong, and resident gardens beneath trellised planting, inviting people to pause, interact, and connect within the larger public realm.

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0 60 120 180 feet

1"=60'

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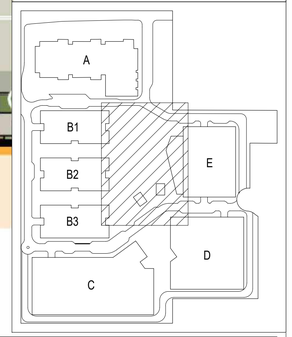

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345 MIDDLEFIELD RD

Project Number
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Description
ENLARGEMENT PLAN - SECTOR 2

Scale
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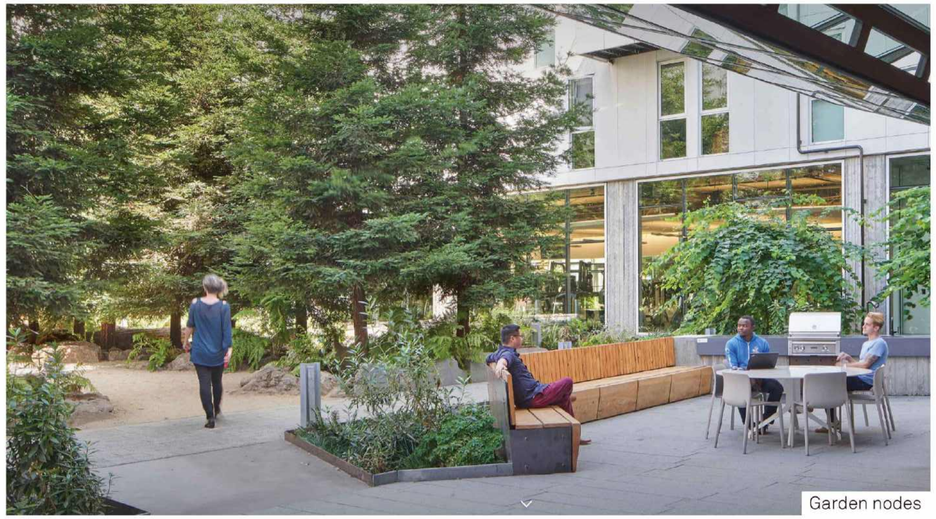
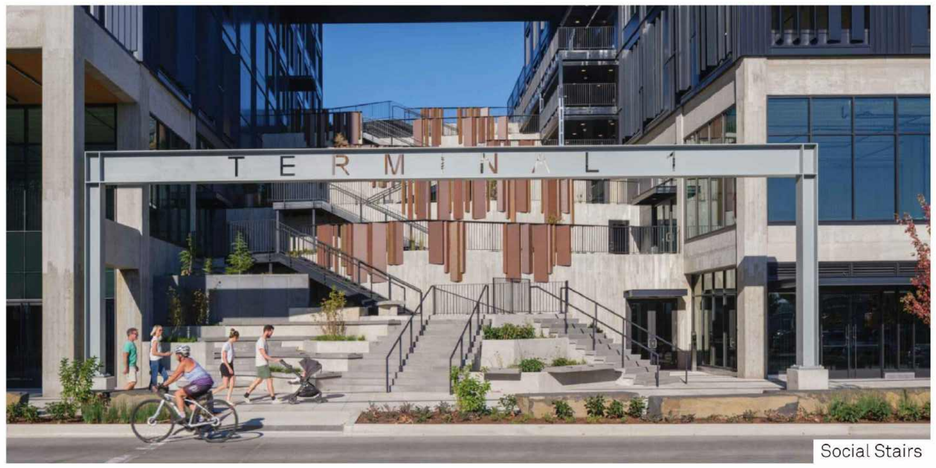
Neighbor's Plaza

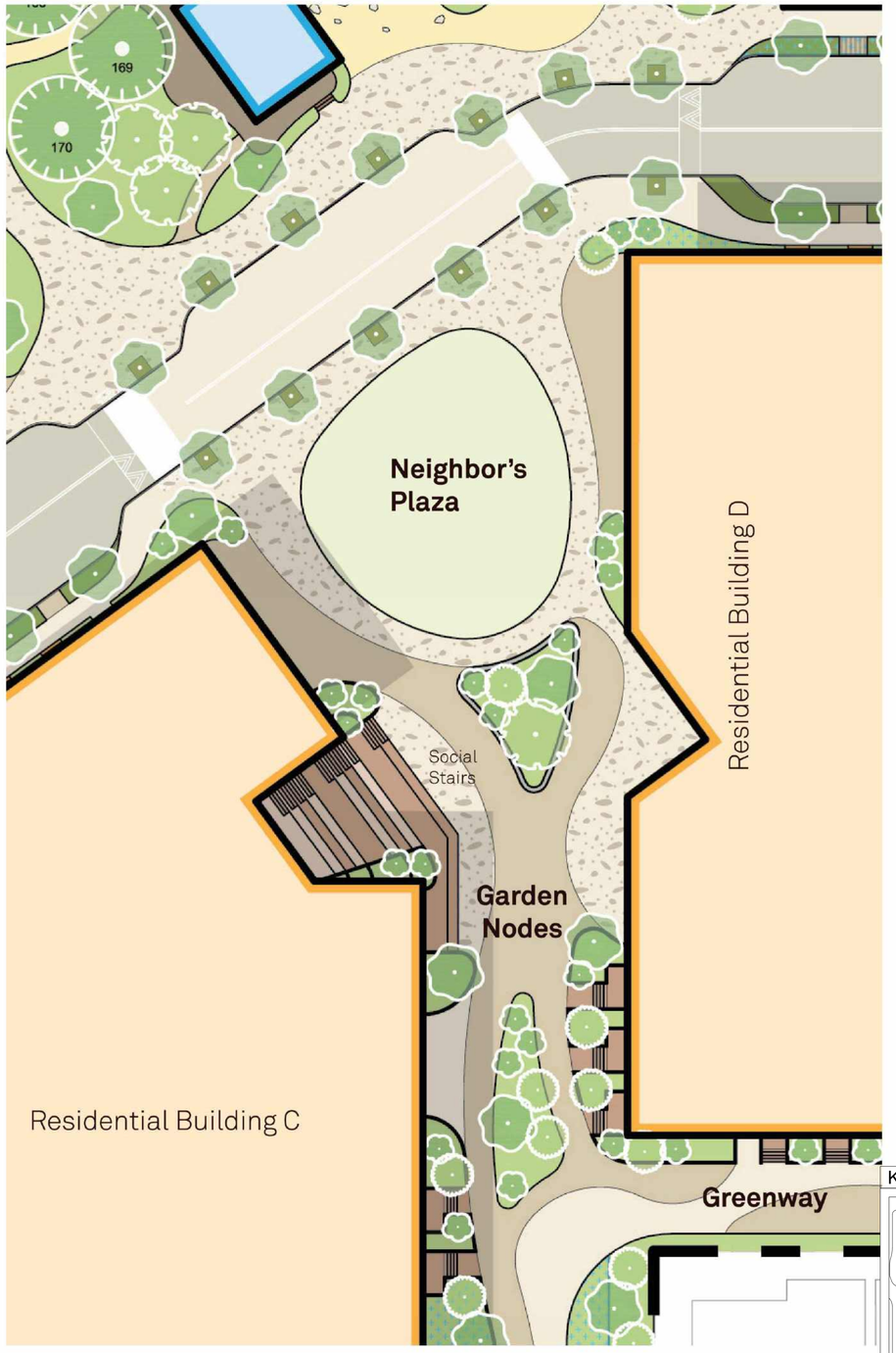
Greenway



Garden nodes



Social Stairs



Neighbor's Plaza: The Neighbor's Plaza is a neigborhood scaled flexible lawn, transitioning between the Redwood Gateway and the social spaces serving the residential buildings. Highly visible and open, it can support outdoor events, farmers' markets, and daily use.

Garden Nodes: Distributed throughout the site, the Garden Nodes punctuate the landscape with smaller-scale spaces for intimacy, play, and respite. These areas can accommodate activities such as chess, ping-pong, and resident gardens beneath trellised planting, inviting people to pause, interact, and connect within the larger public realm.

The Greenway: The Greenway runs along the southern edge of 345 Middlefield as a continuous pedestrian and bicycle corridor linking major public spaces across the site. Lined with native planting and shaded seating, it supports active mobility between the project and surrounding neighborhoods, advances walkability and sustainability goals, and also accommodates essential fire department access.

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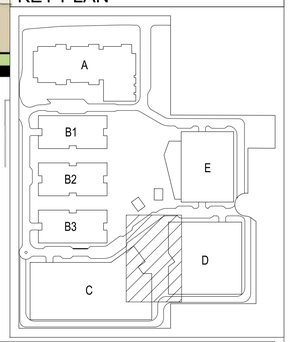
0 60 120 180 feet

1"=60'

KEY PLAN



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Description
ENLARGEMENT PLAN - SECTOR 3

Scale
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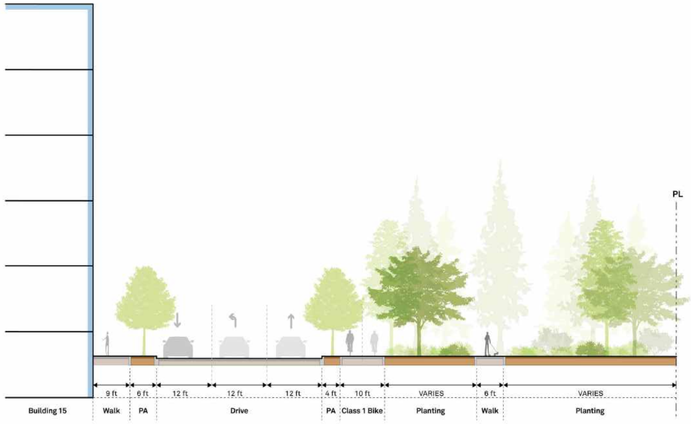
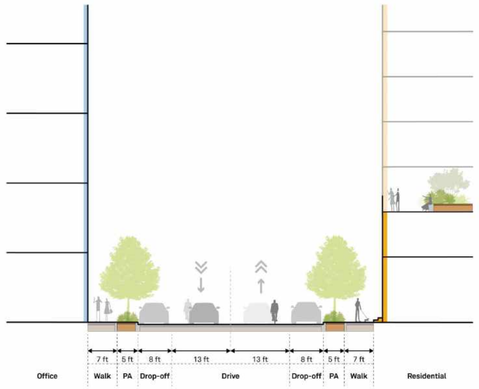


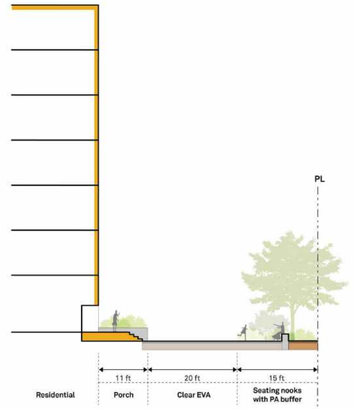
SECTION A - SURVEY LANE

SCALE: 1/16" = 1'-0"



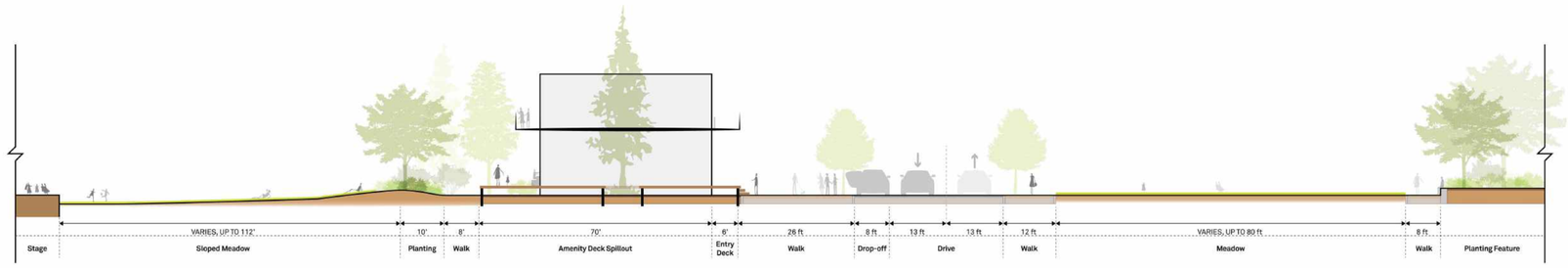
SECTION B - BUILDINGS B AND C STREETSCAPE

SCALE: 1/16" = 1'-0"



SECTION C - BUILDING D FIRE LANE

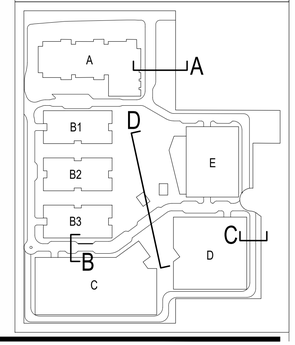
SCALE: 1/16" = 1'-0"



SECTION D - REDWOOD LAWN, AMENITY PAVILION, AND NEIGHBOR'S PLAZA

SCALE: 1/16" = 1'-0"

KEY PLAN



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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
001.4474.000

Description
ILLUSTRATIVE SITE SECTIONS

Scale
1/16" = 1'-0"

L1.02

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REDWOOD FOREST

Redwood
Sequoia sempervirens

California Bay Laurel
Umbellularia californica

Douglas Iris
Iris Douglasiana
Water usage: LOW

Evergreen Huckleberry
Vaccinium Ovatum
Water usage: MODERATE

Giant Chain Fern
Woodwardia fimbriata
Water usage: MODERATE

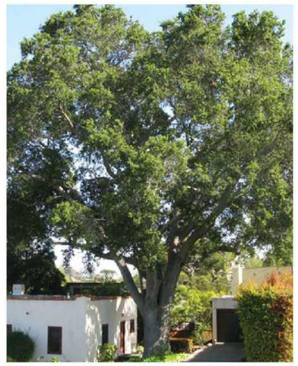
Western Sword Fern
Polystichum munitum
Water usage: MODERATE

Wild Ginger
Asarum caudatum
Water usage: MODERATE

Salal
Gaultheria shallon
Water usage: MODERATE

OAK WOODLAND

Valley Oak
Quercus lobata



Coast Live Oak
Quercus agrifolia

Bigleaf Maple
Acer macrophyllum

California Buckeye
Aesculus californica

Paradise Manzanita
Arctostaphylos pajaroensis 'Paradise'
Water usage: LOW

Yerba Santa
Eriodictyon californicum
Water usage: VERY LOW

Hummingbird Sage
Salvia spathacea
Water usage: LOW

Little Sur Coffeeberry
Rhamnus californica 'Little Sur'
Water usage: LOW

STORMWATER / STREETSCAPE

California Sycamore
Platanus racemosa

Tipu Tree
Tipu tipuana

Strawberry Tree
Arbutus Marina

Western Redbud
Cercis occidentalis

Valley Violet Ceonothus
Ceanothus maritimus 'Valley Violet'
Water usage: LOW

Western Redtwig Dogwood
Cornus sericea
Water usage: MODERATE

Spreading Rush
Juncus patens 'Elk Blue'
Water usage: LOW

Cape Rush
Chondropetalum Tectorum
Water usage: LOW

GENERAL PLANTING NOTES

1. All proposed planting shall comply with applicable City of Menlo Park ordinances, guidelines, and standard specifications, as well as California state and regional landscape regulations, including Model Water Efficient Landscape Ordinance (MWELO) requirements where applicable.

2. Plant species, quantities, and sizes indicated on the planting plan and plant list are preliminary and may be adjusted during final design and construction, subject to City review and approval, to ensure compliance with water use, maintenance, screening, and safety requirements.

3. Plant palette shall emphasize climate-appropriate, drought-tolerant, and regionally adapted species to reduce irrigation demand, support long-term plant health, and contribute to the ecological character of Menlo Park.

4. Landscaping adjacent to walkways, drives, and intersections shall be selected and maintained to preserve required sightlines and clearances for pedestrian and vehicular safety, and to meet accessibility standards.

5. Final planting design shall be coordinated with the project's stormwater management measures (including bioretention and other green infrastructure) to ensure appropriate species selection for drainage conditions and long-term performance.

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345 MIDDLEFIELD RD

Project Number
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Description
PRELIMINARY PLANTING PALETTE

Scale
-

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Roadway

Primary Path

Secondary Path

Open Destinations

Notes:

1. All existing and proposed exterior lighting shall comply with applicable California Building Code and California Energy Code requirements for life safety, site egress, and energy performance.

2. Site lighting design, fixture selection, mounting heights, and photometric performance shall comply with all City of Menlo Park planning, zoning, and engineering standards, including requirements for pedestrian safety, accessible routes, and driveway/garage access.

3. All exterior luminaires shall be full cut-off or shielded to minimize glare and light trespass onto adjacent properties and the public right-of-way, and to support compliance with applicatble dark-sky / night-sky protection regulations.

4. Lighting levels shall be the minimum necessary to provide safe illumination for building entries, paths of egress, parking areas, and other pedestrian circulation routes, and shall be coordinated with final photometric calculations submitted to the City for review and approval.

5. Final fixture schedule, locations, and aiming directions shall be coordinated with the architect, electrical engineer, and landscape architect, and are subject to review and approval by the City of Menlo Park prior to permit issuance.

1 LIGHTING CONCEPT / STREET LIGHTING
SCALE: 1" = 60'-0"

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Project Number
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Description
LIGHTING CONCEPT / STREET LIGHTING

Scale
1" = 60'-0"

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DEVELOPMENT PERMIT PLANS

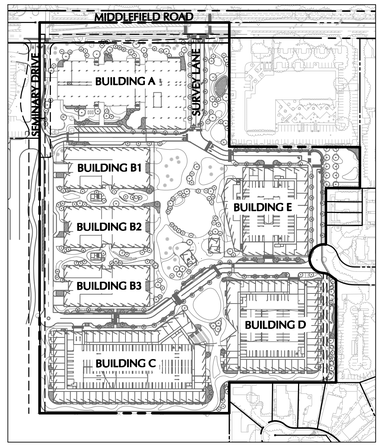
FOR

USGS SITE 345 MIDDLEFIELD ROAD

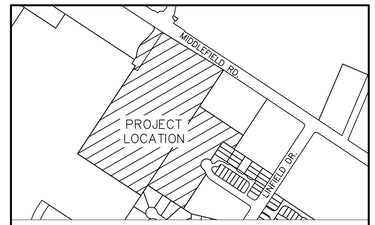
CITY OF MENLO PARK, SAN MATEO COUNTY, CALIFORNIA

SHEET INDEX

DWG. NO.	DRAWING TITLE	SCALE
C1.0	COVER SHEET	AS SHOWN
C2.0	TOPOGRAPHIC SURVEY	AS SHOWN
C2.1	TOPOGRAPHIC SURVEY ENLARGED – SECTOR 1	1–INCH = 20–FT
C2.2	TOPOGRAPHIC SURVEY ENLARGED – SECTOR 2	1–INCH = 20–FT
C2.3	TOPOGRAPHIC SURVEY ENLARGED – SECTOR 3	1–INCH = 20–FT
C2.4	TOPOGRAPHIC SURVEY ENLARGED – SECTOR 4	1–INCH = 20–FT
C2.5	TOPOGRAPHIC SURVEY ENLARGED – SECTOR 5	1–INCH = 20–FT
C2.6	TOPOGRAPHIC SURVEY ENLARGED – SECTOR 6	1–INCH = 20–FT
C3.1	EXISTING SETBACK PLAN	1–INCH = 60–FT
C3.2	PROPOSED SETBACK PLAN	1–INCH = 60–FT
C4.0	DEMOLITION PLAN	1–INCH = 60–FT
C5.0	PRELIMINARY SITE PLAN	1–INCH = 60–FT
C6.0	PRELIMINARY GRADING AND DRAINAGE PLAN	1–INCH = 60–FT
C7.0	PRELIMINARY UTILITY PLAN	1–INCH = 60–FT
C8.0	PRELIMINARY STORMWATER QUALITY CONTROL PLAN	1–INCH = 60–FT
C8.1	PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS	AS SHOWN
C8.2–C8.17	PRELIMINARY STORMWATER QUALITY CONTROL CALCULATIONS	NOT TO SCALE
C9.0	EMERGENCY VEHICLE ACCESS PLAN	1–INCH = 60–FT
C10.0	FIRE TRUCK AERIAL ACCESS PLAN	1–INCH = 60–FT
C10.1	EMERGENCY VEHICLE SECTIONS	NOT TO SCALE
C11.0	TYPICAL STREET SECTIONS	NOT TO SCALE



LOCATION MAP
1-INCH = 200-FT



PROJECT LOCATION MAP
SCALE: N.T.S.

GENERAL NOTES - CIVIL (PLANNING PHASE)

1. CIVIL INFORMATION SHOWN (GRADING, UTILITIES, STORMWATER, PAVING, AND RIGHT–OF–WAY IMPROVEMENTS) IS CONCEPTUAL AND FOR PLANNING/ENTITLEMENT PURPOSES ONLY. FINAL DESIGN, DIMENSIONS, AND DETAILS WILL BE PREPARED AND SEALED BY A LICENSED CIVIL ENGINEER AS PART OF SUBSEQUENT PERMIT SUBMITTALS.
2. ALL FUTURE CIVIL DESIGN AND CONSTRUCTION SHALL COMPLY WITH APPLICABLE STANDARDS AND REQUIREMENTS OF THE CITY OF MENLO PARK, SAN MATEO COUNTY, REGIONAL AGENCIES, AND UTILITY PROVIDERS, AS WELL AS CURRENT CALIFORNIA BUILDING CODE, CALIFORNIA PLUMBING CODE, AND APPLICABLE STORMWATER/NPDES REGULATIONS IN EFFECT AT THE TIME OF PERMIT ISSUANCE.
3. PROPOSED SITE GRADING CONCEPTS ARE DIAGRAMMATIC. FINAL GRADES, SLOPES, AND SPOT ELEVATIONS WILL BE REFINED TO ENSURE ACCESSIBLE ROUTES OF TRAVEL, PROPER DRAINAGE, AND POSITIVE OUTFLOW TO APPROVED DISCHARGE POINTS, SUBJECT TO REVIEW AND APPROVAL BY THE CITY AND RELEVANT AGENCIES.
4. LOCATIONS AND SIZES OF EXISTING AND PROPOSED UTILITIES SHOWN ARE APPROXIMATE AND BASED ON AVAILABLE RECORD INFORMATION. FINAL HORIZONTAL AND VERTICAL ALIGNMENT, CONNECTION POINTS, AND SERVICE SIZES WILL BE DETERMINED DURING DETAILED DESIGN IN COORDINATION WITH THE CITY AND UTILITY PURVEYORS.
5. STORMWATER MANAGEMENT STRATEGIES AND BEST MANAGEMENT PRACTICES (BMPS) DEPICTED ARE ILLUSTRATIVE. FINAL LOW–IMPACT DEVELOPMENT (LID) FEATURES, BIORETENTION AREAS, AND RELATED DRAINAGE INFRASTRUCTURE WILL BE SIZED TO MEET CURRENT REGIONAL STORMWATER REQUIREMENTS AND CITY STANDARDS AS PART OF THE FINAL CIVIL IMPROVEMENT PLANS.
6. ALL IMPROVEMENTS WITHIN THE PUBLIC RIGHT–OF–WAY, INCLUDING CURB, GUTTER, SIDEWALKS, DRIVEWAYS, CURB RAMPS, UTILITIES, AND STREET TREES, WILL BE DESIGNED IN COORDINATION WITH CITY STAFF AND ARE SUBJECT TO SEPARATE ENCROACHMENT AND/OR IMPROVEMENT PERMITS. IN THE EVENT OF ANY CONFLICT BETWEEN THESE PLANS AND CITY STANDARDS, THE CITY'S STANDARDS SHALL GOVERN.
7. FUTURE CONSTRUCTION PHASING AND SITE LOGISTICS, INCLUDING TEMPORARY ACCESS, TRAFFIC CONTROL, STAGING, AND PROTECTION OF EXISTING IMPROVEMENTS AND UTILITIES, WILL BE DEVELOPED DURING THE BUILDING PERMIT PHASE IN ACCORDANCE WITH CITY REQUIREMENTS AND PROJECT CONDITIONS OF APPROVAL.

GENERAL NOTES - SURVEY

1. EXISTING TOPOGRAPHIC AND BOUNDARY INFORMATION SHOWN IS BASED ON A SURVEY PREPARED BY A LICENSED LAND SURVEYOR FOR PLANNING PURPOSES. FINAL PROPERTY BOUNDARIES, EASEMENTS, AND RIGHT–OF–WAY LIMITS WILL BE CONFIRMED AND, IF NECESSARY, UPDATED BY A LICENSED SURVEYOR PRIOR TO PREPARATION OF FINAL ENGINEERING AND CONSTRUCTION DOCUMENTS.
2. CONTOURS, SPOT ELEVATIONS, AND SURFACE FEATURES ARE APPROXIMATE REPRESENTATIONS OF EXISTING FIELD CONDITIONS AT THE TIME OF THE SURVEY AND ARE BASED ON THE SURVEYOR'S DOCUMENTATION. CONDITIONS MAY CHANGE OVER TIME; THE CONTRACTOR AND DESIGN TEAM SHALL VERIFY CRITICAL DIMENSIONS AND ELEVATIONS IN THE FIELD DURING LATER DESIGN AND CONSTRUCTION PHASES.
3. RECORD EASEMENTS, RIGHTS–OF–WAY, AND ENCUMBRANCES SHOWN ARE COMPILED FROM AVAILABLE TITLE REPORTS AND PUBLIC RECORDS AND MAY NOT REPRESENT A COMPLETE LISTING. A CURRENT TITLE REPORT WILL BE OBTAINED PRIOR TO FINAL DESIGN, AND ANY ADDITIONAL RECORDED DOCUMENTS WILL BE INCORPORATED INTO THE FINAL SURVEY AND IMPROVEMENT PLANS.
4. LOCATIONS AND SIZES OF EXISTING UNDERGROUND UTILITIES HAVE BEEN COMPILED FROM VISIBLE EVIDENCE AND AVAILABLE RECORD DRAWINGS AND ARE APPROXIMATE ONLY. EXACT LOCATIONS, SIZES, AND DEPTHS WILL BE DETERMINED IN THE FIELD BY UTILITY LOCATING, POTHOLING, OR OTHER APPROVED METHODS PRIOR TO CONSTRUCTION.
5. THE SURVEY INFORMATION IS PROVIDED TO SUPPORT LAND USE PLANNING AND ENTITLEMENT REVIEW AND IS NOT INTENDED TO BE USED AS A SUBSTITUTE FOR A FINAL BOUNDARY SURVEY, CONSTRUCTION STAKING, OR RECORD OF SURVEY WHERE REQUIRED BY LAW.

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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
COVER SHEET

Scale
AS SHOWN

C1.00

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Date: 1/29/2026 Time: 20:08 User: dshitanishi Style Table: Langan.stb Layout: C1.00 Document Code: 770730001-0301-GI001-0101

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SURVEY NOTES

1. ALL DISTANCES SHOWN HEREON ARE IN FEET AND DECIMALS THEREOF.

2. PHYSICAL ITEMS SHOWN ON THIS SURVEY ARE LIMITED TO THOSE ITEMS VISIBLE AS OF THE DATE OF THIS SURVEY. SUBSURFACE STRUCTURES, IF ANY, ARE NOT SHOWN. SAID SUBSURFACE OBJECTS MAY INCLUDE, BUT ARE NOT LIMITED TO, CONCRETE FOOTINGS, SLABS, SHORING, STRUCTURAL PILES, UTILITY VAULTS, PIPING, UNDERGROUND TANKS, AND ANY OTHER SUBSURFACE STRUCTURES NOT REVEALED BY A SURFACE REVIEW OF SITE FEATURES.

3. ASSESSOR'S PARCEL NO.: 062-390-700, 062-421-070 – SAN MATEO COUNTY GIS DATABASE

4. BASIS OF BEARINGS: THE BEARING NORTH 30°08'02" EAST OF THE CENTERLINE OF LINFIELD DRIVE BETWEEN 2 FOUND MONUMENTS WAS USED AS THE BASIS OF ALL BEARINGS SHOWN ON THIS SURVEY. THE MERIDIAN OF THIS SURVEY IS DERIVED AND REFERENCED TO NORTH AMERICAN DATUM OF 1983 (NAD83) (EPOCH 2011) CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE V AND SCALED TO GROUND AT A POINT HAVING A NORTH COORDINATE OF 1992761.3791 AND AN EAST COORDINATE OF 6076139.7933. THE COMBINED SCALE FACTOR FOR SAID POINT TO SCALE FROM GRID TO GROUND IS 1.000055374465. POSITION WAS DETERMINED BY GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS) AS PROVIDED BY HEXAGON SMARTNET CONTINUOUSLY OPERATED REFERENCE STATIONS (CORS).

5. BENCHMARK: NATIONAL GEODETIC SURVEY BENCHMARK NO. Y-150 LOCATED AT THE INTERSECTION OF MIDDLEFIELD ROAD, PALO ALTO AVENUE, AND WOODLAND AVENUE, NORTHEAST AND ACROSS MIDDLEFIELD ROAD FROM THE PALO ALTO CITY LIMITS SIGN, AT A LARGE CONCRETE ARCH BRIDGE OVER SAN FRANCISQUITO CREEK AND UNDER MIDDLEFIELD ROAD, IN THE TOP OF THE SOUTHEAST END OF THE NORTHEAST HEAD WALL.
   NGS ADVERTISED NAVD88 ELEVATION = 59.9

6. THE SUBJECT PROPERTY IS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 308 OF 510, MAP NUMBER 06081C0308E DATED OCTOBER 16, 2012 AND WAS FOUND TO BE WITHIN THE FOLLOWING DESIGNATED ZONES:

   ZONE D: AREAS IN WHICH FLOOD HAZARDS ARE UNDETERMINED, BUT POSSIBLE.

   ZONE X: AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREA OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.

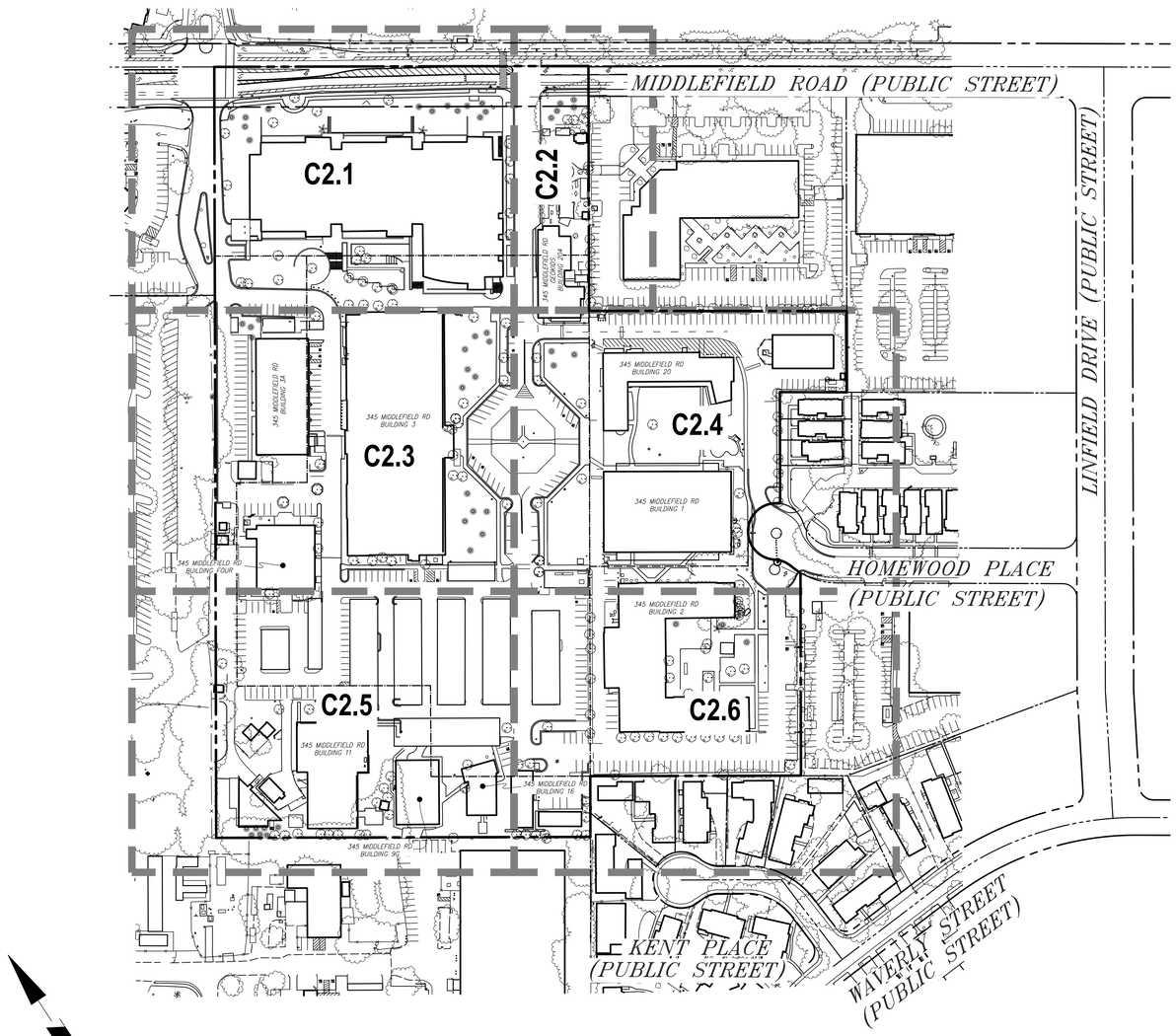
INFORMATION WAS OBTAINED FROM THE FEMA WEBSITE ON JULY 9, 2025.

7. SITE AREA:

   17.7473 ACRES (773,073± S.F.) – GROSS
   17.0538 ACRES (742,863± S.F.) – NET *ACCOUNTING FOR PORTION OF MIDDLEFIELD ROAD RIGHT OF WAY FRONTAGE

8. PROPERTY ADDRESS:

   345 MIDDLEFIELD RD
   MENLO PARK, CA 94025



100 0 25 50 100
SCALE: 1 INCH = 100 FEET

LEGEND (NOT SHOWN TO SCALE)

AC	AIR CONDITIONING UNIT	PP	POWER POLE
●	BOLLARD	WM	WATER METER
◎	COLUMN	WV	WATER VALVE
△	DOOR	X 262.3	SPOT ELEVATION
◬	DOUBLE DOOR	CONC	CONCRETE
⚲	FLAG POLE	-□-□-□-	STOCKADE FENCE
⚲	SIGN	-x-x-x-	CHAINLINK FENCE
	SHRUB		TREE LINE
	TREE		OVERHEAD WIRE
	CATCH BASIN		PROPERTY LINE
	CLEANOUT		DRAINAGE LINE OBSERVED
E	ELECTRIC BOX		SEWER LINE OBSERVED
EM	ELECTRIC METER	D	DRAINAGE MARK OUT LINE
	FIRE HYDRANT	E	ELECTRIC MARK OUT LINE
C	COMMUNICATION BOX	C	COMMUNICATION MARK OUT LINE
GM	GAS METER	G	GAS MARK OUT LINE
	GAS VALVE	S	SANITARY SEWER MARK OUT LINE
	GUY WIRE	W	WATER MARK OUT LINE
	LIGHT POLE		
(D)(E)(FD)(G)(S)(SD)(W)(V)	MANHOLE (TYPE AS LABELED)		

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Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
TOPOGRAPHIC SURVEY

Scale
1-INCH = 100-FT

C2.0

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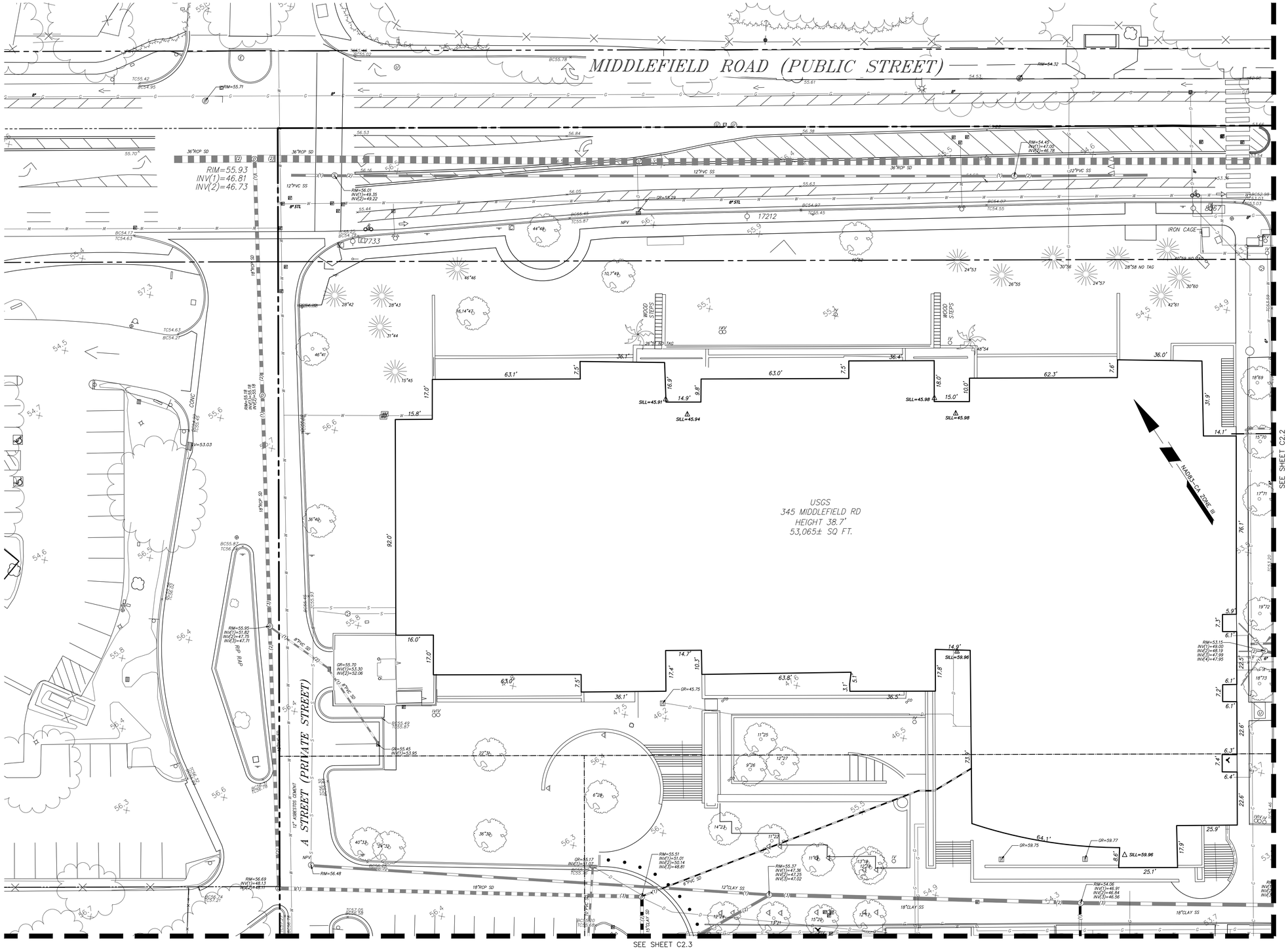

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01.30.2026	PLANNING APPLICATION

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Description
TOPOGRAPHIC SURVEY
ENLARGED - SECTOR 1

Scale
1-INCH = 20-FT

C2.1

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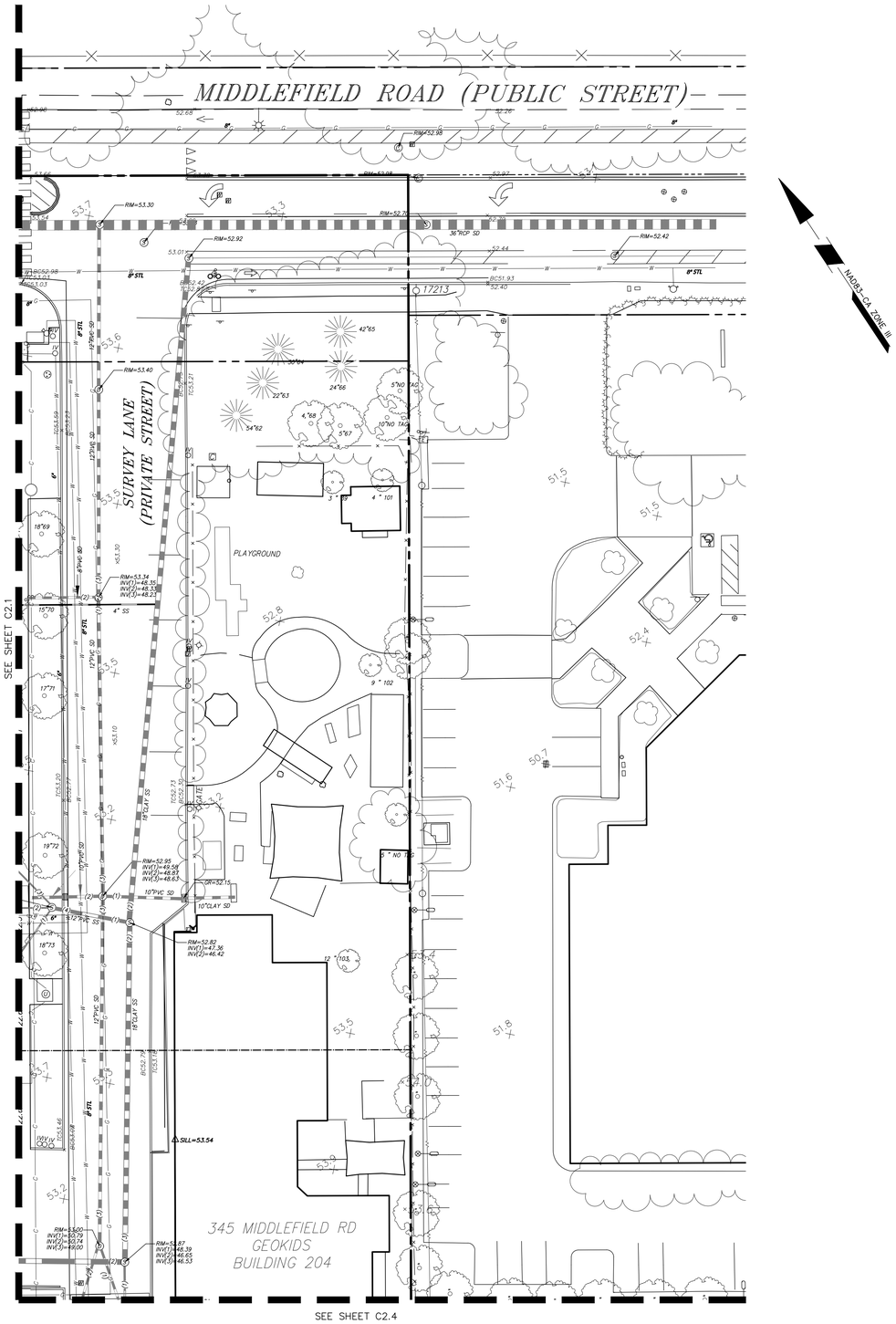

20 0 5 10 20
SCALE: 1 INCH = 20 FEET

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01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
TOPOGRAPHIC SURVEY
ENLARGED - SECTOR 2

Scale
1-INCH = 20-FT

C2.2

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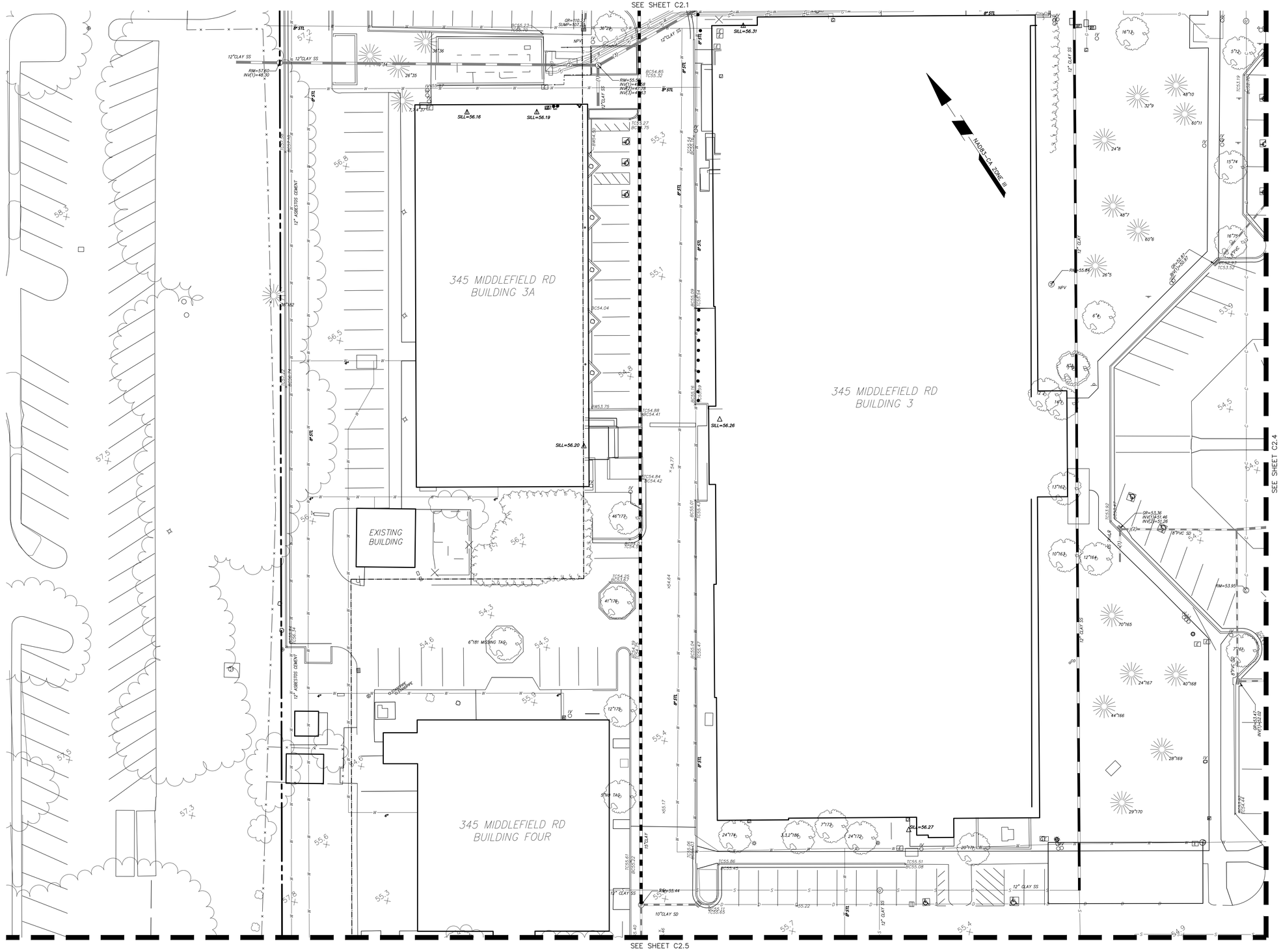

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Project Number
770730001

Description
TOPOGRAPHIC SURVEY
ENLARGED - SECTOR 3

Scale
1-INCH = 20-FT

C2.3

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SEE SHEET C2.2

SEE SHEET C2.3

345 MIDDLEFIELD RD
BUILDING 20

345 MIDDLEFIELD RD
BUILDING 1

EXISTING
BUILDING

PICNIC TABLES

FLAG POLE

MARBLACA ZONE III

120084374

SCALE: 1 INCH = 20 FEET

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Project Number
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Description
TOPOGRAPHIC SURVEY
ENLARGED - SECTOR 4

Scale
1-INCH = 20-FT

C2.4

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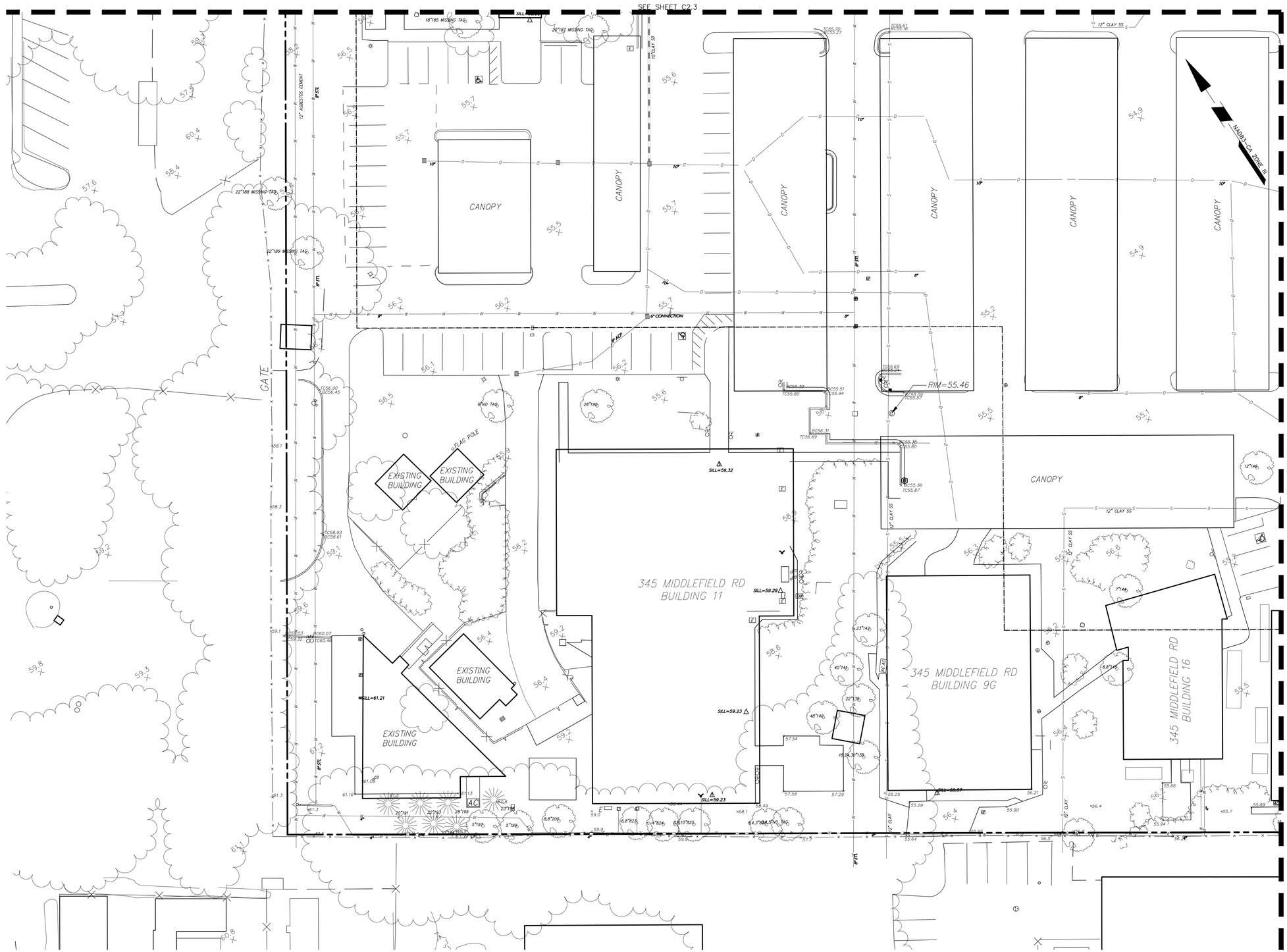

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
TOPOGRAPHIC SURVEY
ENLARGED - SECTOR 5

Scale
1-INCH = 20-FT

C2.5

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SEE SHEET C2.4

SEE SHEET C2.5

345 MIDDLEFIELD RD
BUILDING 2

CANOPY

PICNIC TABLES

EXISTING BUILDING

EXISTING BUILDING

NO NUMBER NO WIRES

NADB3-CA ZONE III

SCALE: 1 INCH = 20 FEET

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01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
TOPOGRAPHIC SURVEY
ENLARGED - SECTOR 6

Scale
1-INCH = 20-FT

C2.6

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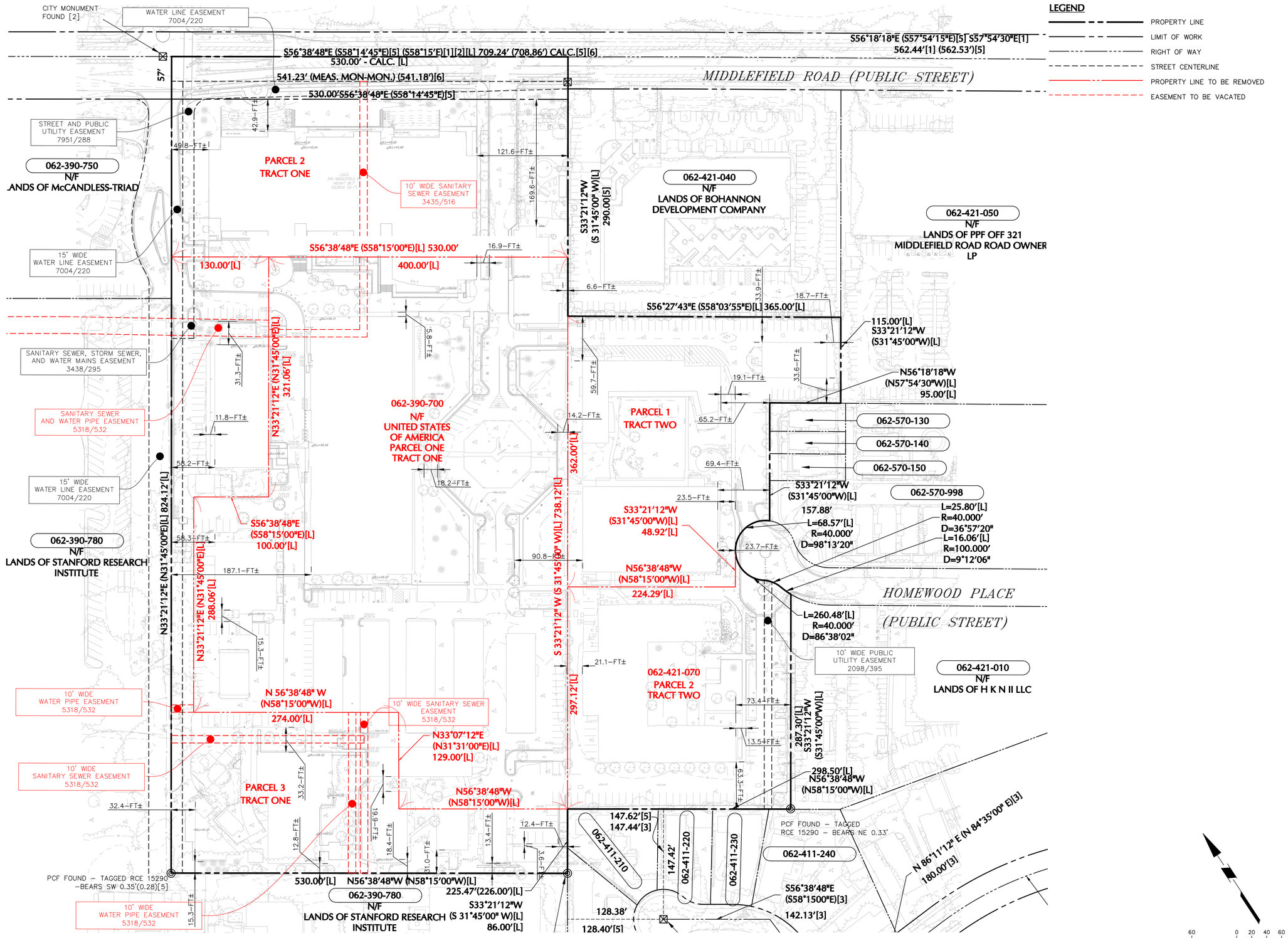

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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
EXISTING SETBACK PLAN

Scale
1-INCH = 60-FT

C3.01

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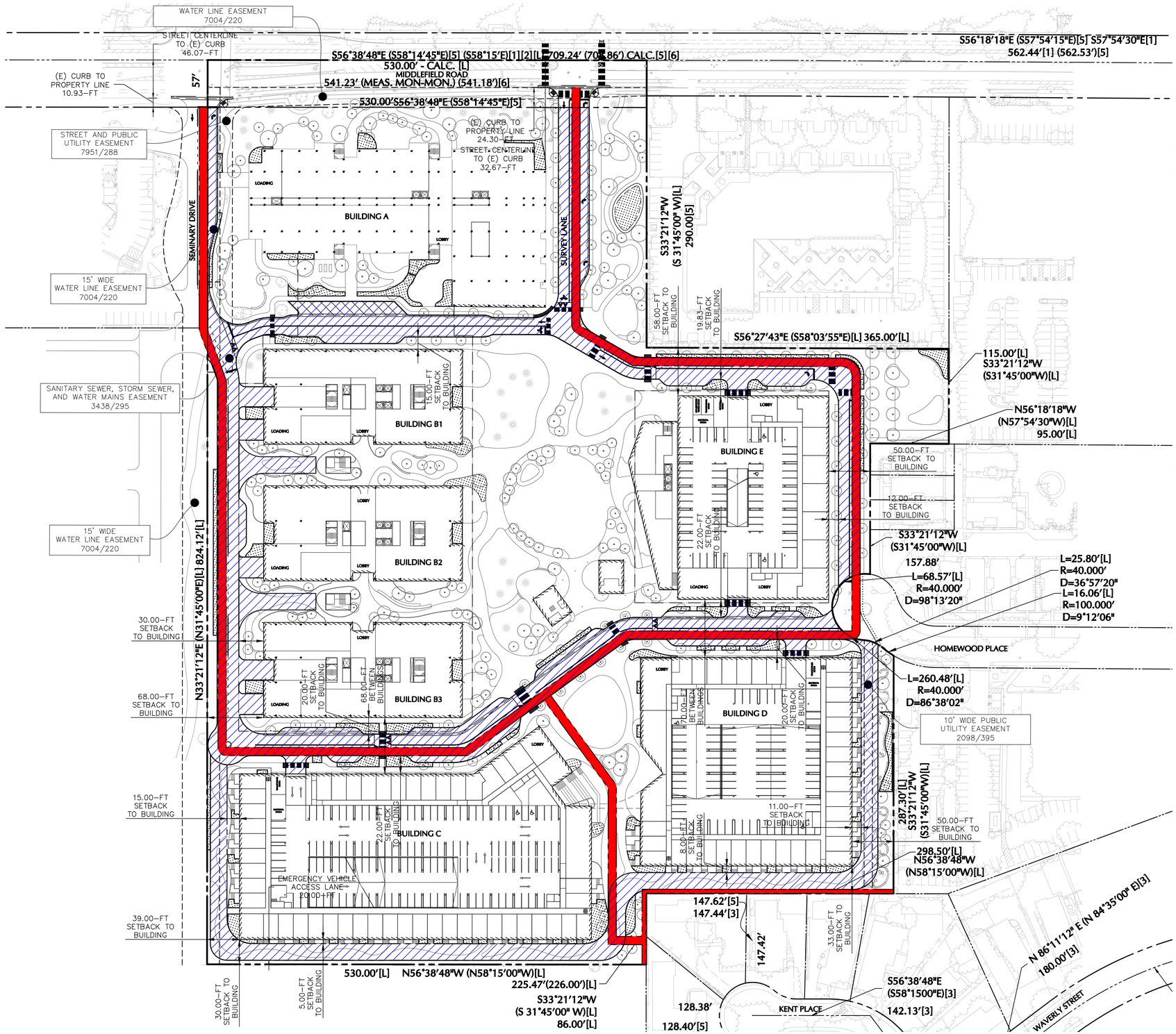

LEGEND

- PROPERTY LINE
- RIGHT OF WAY
- STREET CENTERLINE
- EASEMENT
- PROPOSED EVAE
- PROPOSED PG&E EASEMENT

NOTES

1. ALL PUBLIC SANITARY SEWER WITHIN THE 345 MIDDLEFIELD PROJECT SHALL BE OWNED BY WEST BAY SANITATION DISTRICT AND SHALL BE WITHIN A PSE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. ALL PUBLIC WATER MAINS WITHIN THE 345 MIDDLEFIELD PROEJCT SHALL BE OWNED BY THE CITY OF MENLO PARK AND SHALL BE WITHIN A PSE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. PROPOSED SURFACE IMPROVEMENTS ARE SHOWN ON SHEET C5.0
4. PROPOSED UTILITIES ARE SHOWN ON SHEET C7.0

ABBREVIATIONS

(E)	EXISTING
EVAE	EMERGENCY VEHICLE ACCESS EASEMENT
FT	FEET
PAE	PUBLIC ACCESS EASEMENT
PG&E	PACIFIC GAS & ELECTRIC
PSE	PUBLIC SERVICE EASEMENT
R.O.W.	RIGHT OF WAY
S.W.E.	SIDEWALK EASEMENT

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PROPOSED SETBACK PLAN

Scale
1-INCH = 60-FT

C3.02

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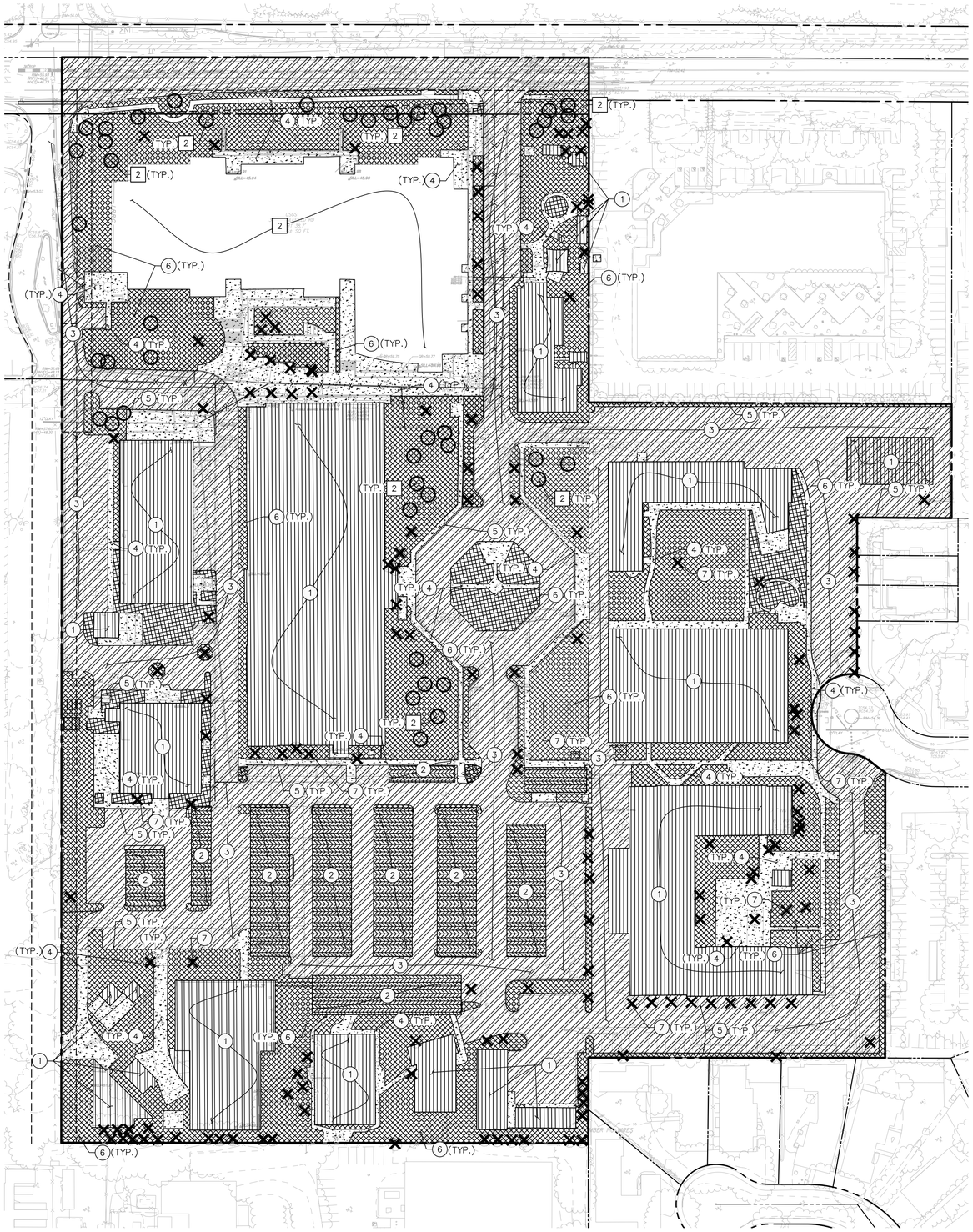

LEGEND

- PROPERTY LINE
- LIMIT OF DEMOLITION
- DEMOLISH (E) BUILDING
- DEMOLISH ASPHALT PAVEMENT
- DEMOLISH CONCRETE PAVEMENT
- CLEAR & GRUB (E) LANDSCAPING
- REMOVE (E) TREE
- DEMOLISH (E) PRIVATE UTILITY
- PLUG AND ABANDON (E) UTILITY
- PROTECT TREE
- 2-INCH GRIND AND OVERLAY WITH DIGOUTS, SEE SITE PLAN
- SLURRY SEAL WITH DIGOUTS, SEE SITE PLAN
- ASPHALT PAVING – MAINTENANCE
- DEMOLISH (E) PARKING STRUCTURE

ABBREVIATIONS

(E)	EXISTING
BFP	BACKFLOW PREVENTER
FDC	FIRE DEPARTMENT CONNECTION
PIV	POST INDICATOR VALVE
SF	SQUARE FEET
SLP	SEE LANDSCAPE PLANS
TPF	TREE PROTECTION FENCING

ITEMS TO BE DEMOLISHED

1. DEMOLISH (E) BUILDING
2. DEMOLISH (E) PARKING STRUCTURE
3. DEMOLISH (E) ASPHALT PAVEMENT
4. DEMOLISH (E) CONCRETE PAVEMENT
5. DEMOLISH (E) CURB
6. CLEAR & GRUB (E) LANDSCAPE
7. REMOVE (E) TREE
8. DEMOLISH (E) STORM DRAIN STRUCTURE
9. DEMOLISH (E) STORM DRAIN PIPE
10. DEMOLISH (E) PRIVATE SANITARY SEWER STRUCTURE
11. DEMOLISH (E) PRIVATE SANITARY SEWER PIPE
12. DEMOLISH (E) PRIVATE WATER LINE AND ASSOCIATED VALVES
13. DEMOLISH (E) GAS LINE AND ASSOCIATED STRUTURES
14. DEMOLISH (E) ELECTRICAL LINE
15. DEMOLISH (E) PIV
16. DEMOLISH (E) GAS LINE AND RELOCATE TO SVP TRENCH
17. DEMOLISH (E) ELECTRICAL LINE AND RELOCATE TO SVP TRENCH
18. DEMOLISH STAIRS
19. PLUG AND ABANDON (E) SANITARY SEWER LATERAL PER CITY STANDARDS
20. PLUG AND ABANDON (E) WATER LATERAL PER CITY STANDARDS
21. PLUG AND ABANDON (E) STORM DRAIN PIPE PER CITY STANDARDS
22. DEMOLISH (E) PRIVATE RECYCLED WATER STRUCTURE
23. DEMOLISH (E) PRIVATE RECYCLED WATER PIPE
24. DEMOLISH DRIVEWAY
25. (E) LIGHT TO BE REMOVED AND REPLACED, SEE LIGHTING PLANS
26. PLUG AND ABANDON (E) GAS LINE PER CITY STANDARDS
27. PLUG AND ABANDON (E) ELECTRICAL CONDUIT
28. PLUG AND ABANDON (E) RECYCLED WATER PIPE PER CITY STANDARDS
29. DEMOLISH FENCE
30. REMOVE SIGN
31. REMOVE BOLLARD
32. DEMOLISH (E) DOMESTIC WATER SERVICE ASSEMBLY
33. DEMOLISH (E) FIRE WATER SERVICE ASSEMBLY
34. DEMOLISH (E) FIRE HYDRANT

ITEMS TO BE PROTECTED IN PLACE

1. PROTECT TREE (SLP FOR TPF LOCATIONS)
2. PROTECT (E) BUILDING
3. LANDSCAPE TO BE PROTECTED
4. PROTECT BUILDING OR STRUCTURE
5. PROTECT (E) WATER PIPE
6. PROTECT (E) LIGHT
7. PROTECT (E) GAS PIPE
8. PROTECT (E) RECYCLED WATER PIPE
9. PROTECT (E) STORM DRAIN PIPE

60 0 20 40 60
SCALE: 1 INCH = 60 FEET

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01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
DEMOLITION PLAN

Scale
1-INCH = 60-FT

C4.00

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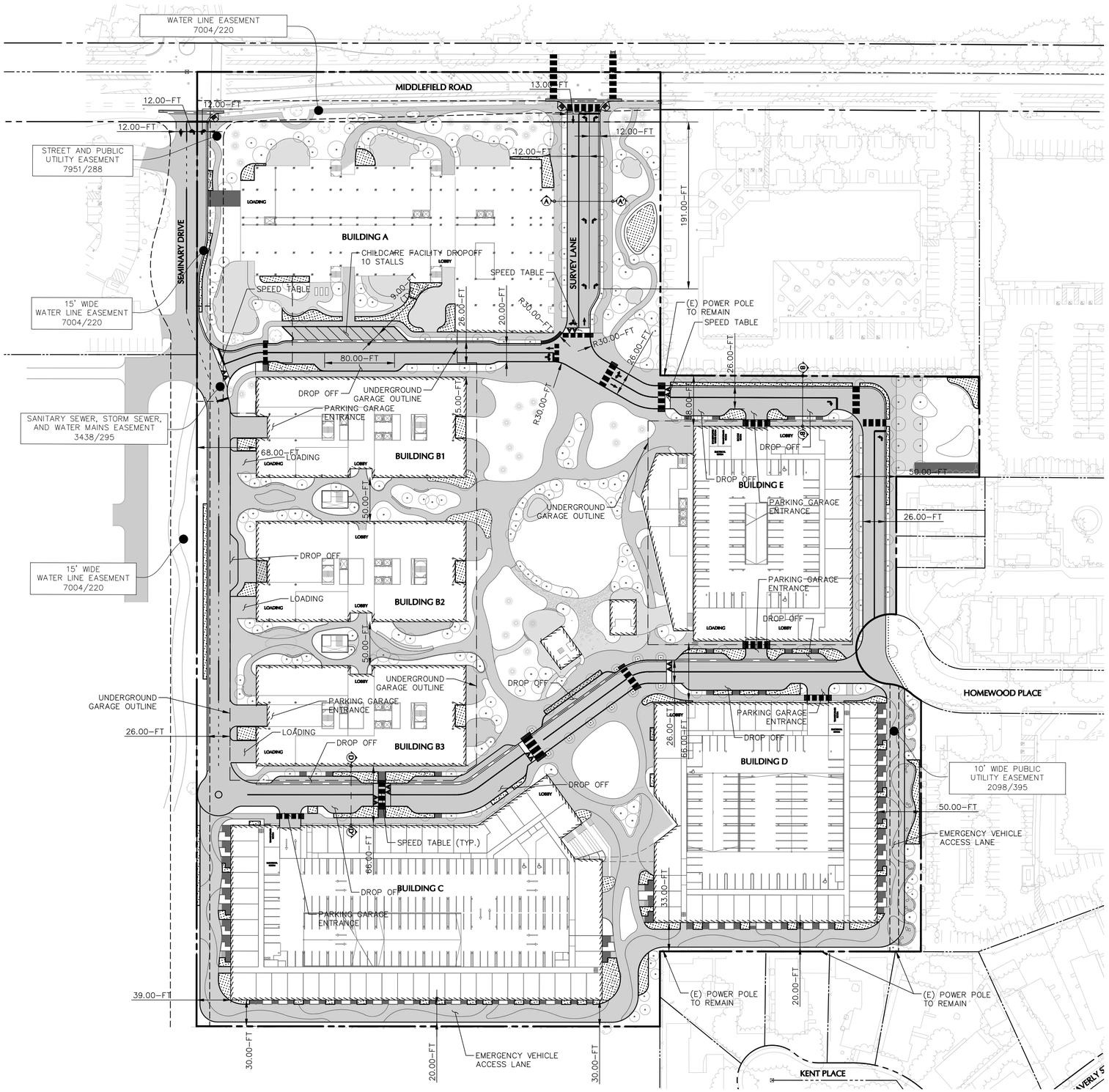

LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- RIGHT OF WAY
- STREET CENTERLINE
- EASEMENT
- BUILDING
- ASPHALT PAVEMENT
- CONCRETE SIDEWALK
- GRIND AND OVERLAY
- DETECTABLE WARNING SURFACE
- BIORETENTION
- FLOW THROUGH PLANTER
- SPEED TABLE

NOTES

1. SEE SHEET C11.0 FOR TYPICAL STREET SECTIONS

60 0 20 40 60
SCALE: 1 INCH = 60 FEET

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Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY SITE PLAN

Scale
1-INCH = 60-FT

C5.00

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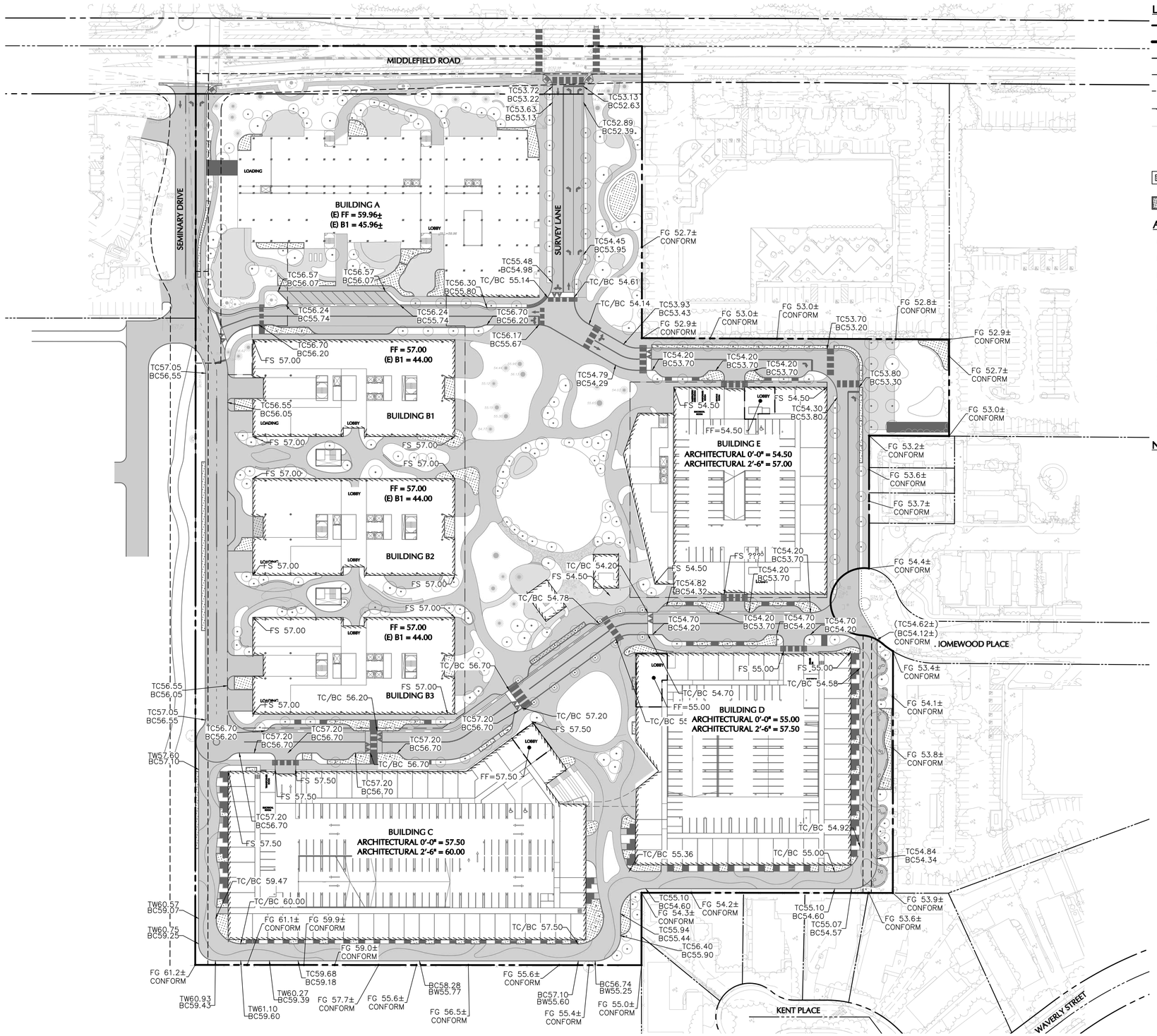

LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- RIGHT OF WAY
- STREET CENTERLINE
- EASEMENT
- BUILDING
- (E) CONTOUR
- (E) SPOT ELEVATION
- FS 54.50 SPOT ELEVATION
- BIORETENTION
- FLOW THROUGH PLANTER

ABBREVIATIONS

(E)	EXISTING
BC	BOTTOM OF CURB
BW	BOTTOM OF WALL
FF	FINISH FLOOR
FG	FINISH GRADE (LANDSCAPE)
FS	FINISH SURFACE (HARDSCAPE)
SD	STORM DRAIN
SDCO	STORM DRAIN CLEANOUT
SDMH	STORM DRAIN MANHOLE
SDO	STORM DRAIN OVERFLOW
TC	TOP OF CURB
TW	TOP OF WALL

NOTES

1. SEE ARCHITECTURAL PLANS FOR STEPPING OF SLAB FOR FINISH FLOOR WITHIN THE BUILDING.

60 0 20 40 60
SCALE: 1 INCH = 60 FEET

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01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY GRADING AND DRAINAGE PLAN

Scale
1-INCH = 60-FT

C5.00

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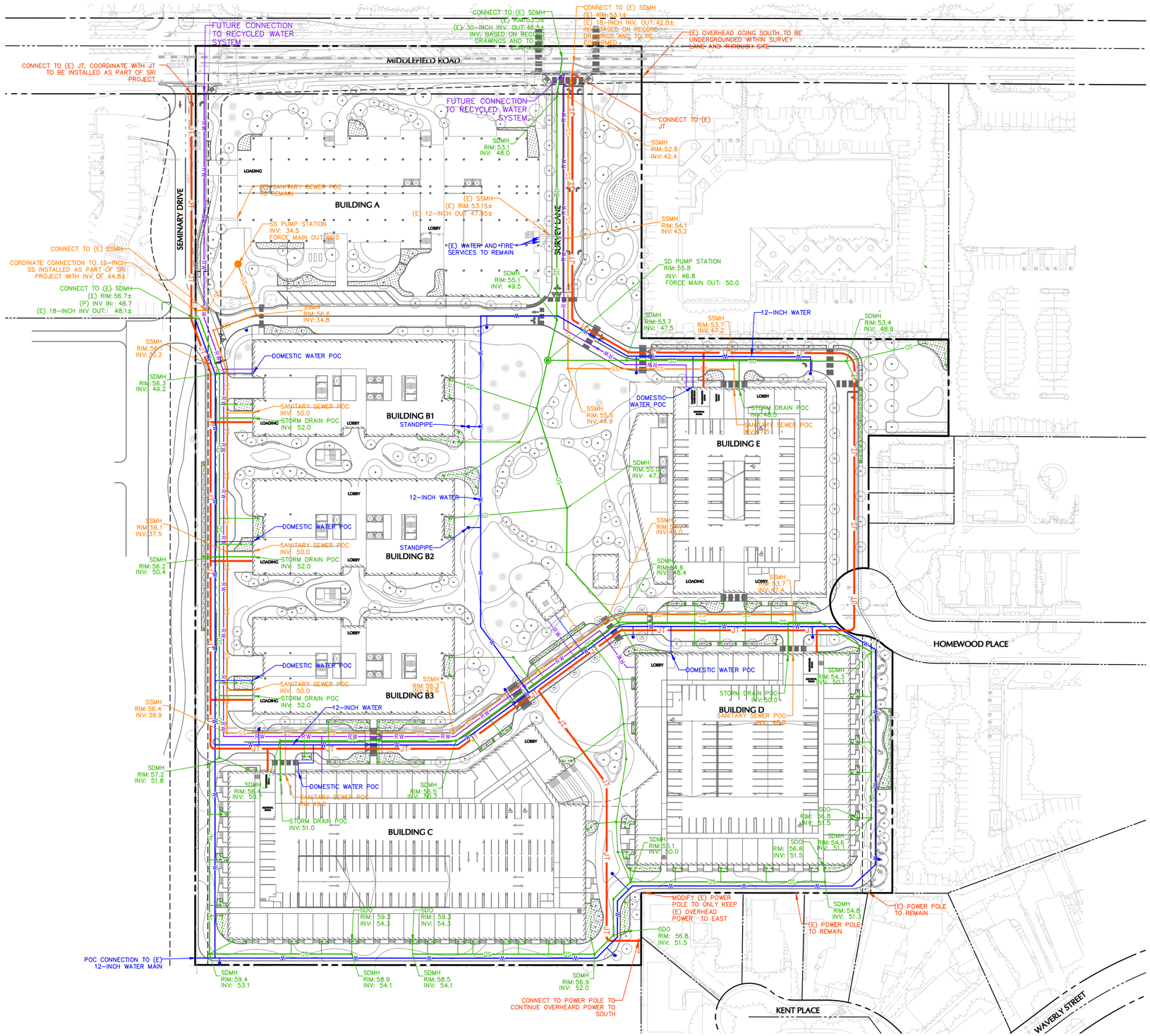

LEGEND

- PROPERTY LINE
- RIGHT OF WAY
- STREET CENTERLINE
- EASEMENT
- RECYCLED WATER MAIN (8-INCH)
- SANITARY SEWER MAIN – SEE NOTE 1
- SSMH
- SSCO
- (E) SANITARY SEWER MAIN
- (E) SSMH
- (E) SSCO
- STORM DRAIN
- PERFORATE STORM UNDERDRAIN
- SDMH
- SDCO
- SDO
- (E) STORM DRAIN
- (E) SDMH
- (E) SDCB
- WATER MAIN – SEE NOTE 2
- (E) WATER MAIN
- FIRE HYDRANT
- (E) FIRE HYDRANT
- JT, SRO – JT PLANS TO BE DEVELOPED
- (E) JT
- (E) GAS

NOTES

1. ALL PUBLIC SANITARY SEWER WITHIN THE 345 MIDDLEFIELD PROJECT SHALL BE OWNED BY WEST BAY SANITATION DISTRICT AND SHALL BE WITHIN A PSE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. ALL PUBLIC WATER MAINS WITHIN THE 345 MIDDLEFIELD PROEJCT SHALL BE OWNED BY THE CITY OF MENLO PARK AND SHALL BE WITHIN A PSE UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ABBREVIATIONS

(E)	EXISTING
FT	FEET
JT	JOINT TRENCH
(P)	PROPOSED
PAE	PUBLIC ACCESS EASEMENT
PG&E	PACIFIC GAS & ELECTRIC
PSE	PUBLIC SERVICE EASEMENT
SDMH	STORM DRAIN MANHOLE
SRO	SHOWN FOR REFERENCE ONLY
SSMH	SANITARY SEWER MANHOLE

60 0 20 40 60
SCALE: 1 INCH = 60 FEET

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	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY UTILITY PLAN

Scale
1-INCH = 60-FT

C7.00

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LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- RIGHT OF WAY
- STREET CENTERLINE
- DMA BOUNDARY
- IMPERVIOUS SURFACE
- IMPERVIOUS SURFACE (EQUIVALENT TREATMENT)
- IMPERVIOUS SURFACE (TREATED IN-LIEU)
- SELF RETAINING LANDSCAPE AREA
- BIORETENTION WITH SIDE SLOPES
- FLOW THROUGH PLANTER

ABBREVIATIONS

(E)	EXISTING
DS	DOWNSPOUT
DMA	DRAINAGE MANAGEMENT AREA
SD	STORM DRAIN
SF	SQUARE FEET
SDCO	STORM DRAIN CLEANOUT
SDMH	STORM DRAIN MANHOLE
SDO	STORM DRAIN OVERFLOW
SRA	SELF RETAIING AREA
STA	SELF TREATING AREA
TCM	TREATMENT CONTROL SUMMARY

NOTES

1. SEE SHEET C8.1 FOR TYPICAL STORMWATER TREATMENT DETAILS, SHEETS C8.2–C8.3 FOR TCM SUMMARY TABLE AND C8.4–C8.17 FOR COMBINATION FLOW AND VOLUME SIZING CALCULATIONS.

60 0 20 40 60
SCALE: 1 INCH = 60 FEET

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01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER CONTROL PLAN

Scale
1-INCH = 60-FT

C8.0

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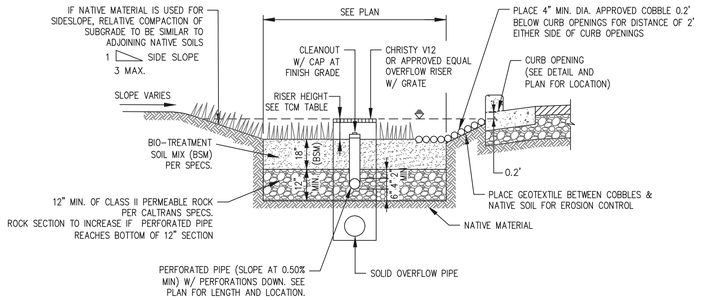


SIZING METHOD:
FLOW-COMBO

1 BIORETENTION BASIN W/O LINER N.T.S.

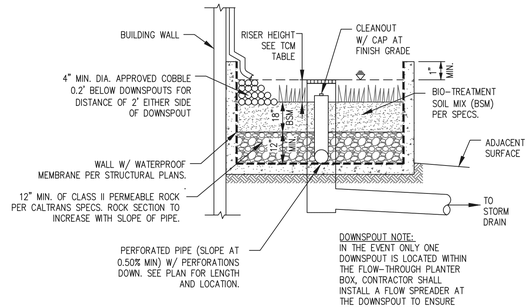
BIOTREATMENT SOIL REQUIREMENTS

BIORETENTION SOIL MIX SHALL MEET THE REQUIREMENTS AS OUTLINED IN APPENDIX K OF THE C.3 STORM WATER HANDBOOK AND SHALL BE A MIXTURE OF FINE SAND AND COMPOST MEASURED ON A VOLUME BASIS OF 60-70% SAND AND 30-40% COMPOST. CONTRACTOR TO REFER TO APPENDIX K FOR SAND AND COMPOST MATERIAL SPECIFICATIONS. CONTRACTOR MAY OBTAIN A COPY OF THE C3 HANDBOOK AT : HTTPS:https: //www.smcgov.org/media/146080/download?attachment

- PRIOR TO ORDERING THE BIOTREATMENT SOIL MIX OR DELIVERY TO THE PROJECT SITE, CONTRACTOR SHALL PROVIDE A BIOTREATMENT SOIL MIX SPECIFICATION CHECKLIST, COMPLETED BY THE SOIL MIX SUPPLIER AND CERTIFIED TESTING LAB.

BIORETENTION & FLOW-THROUGH PLANTER NOTES:

1. SEE GRADING PLAN FOR BASIN FOOTPRINT AND DESIGN ELEVATIONS.
2. PLACE 3 INCHES OF COMPOSTED, NON-FLOATABLE MULCH IN AREAS BETWEEN STORMWATER PLANTINGS AND SIDE SLOPE.
3. SEE LANDSCAPE PLAN FOR MULCH, PLANT MATERIALS AND IRRIGATION REQUIREMENTS
4. CURB CUTS SHALL BE A MINIMUM 18" WIDE AND SPACED AT MAXIMUM 10' O.C. INTERVALS AND SLOPED TO DIRECT STORMWATER TO DRAIN INTO THE BASIN. CURB CUTS SHALL ALSO NOT BE PLACED INLINE WITH OVERFLOW CATCH BASIN. SEE GRADING PLAN FOR MORE DETAIL ON LOCATIONS OF CURB CUTS.
5. A MINIMUM 0.2' DROP BETWEEN STORM WATER ENTRY POINT (I.E. CURB OPENING, FLUSH CURB, ETC.) AND ADJACENT LANDSCAPE FINISHED GRADE.
6. DO NOT COMPACT NATIVE SOIL / SUBGRADE AT BOTTOM OF BASIN. LOOSEN SOIL TO 12" DEPTH.

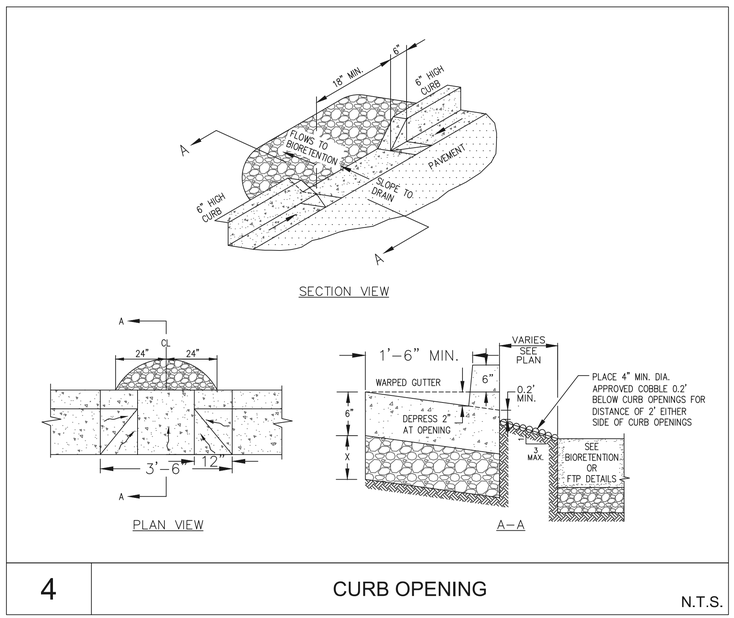


SIZING METHODS:
FLOW-COMBO
4%

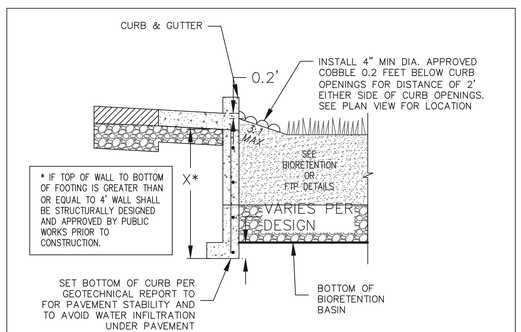
2 FLOW-THROUGH PLANTER (ABOVE GRADE) N.T.S.

SIZING METHODS:
FLOW-COMBO
4%

3 FLOW-THROUGH PLANTER (BELOW GRADE) N.T.S.



4 CURB OPENING N.T.S.



5 CURB ADJACENT TO BIORETENTION N.T.S.

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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.1

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TREATMENT CONTROL MEASURE SUMMARY TABLE

DMA #	TCM #	Location[1]	Treatment Type[2]	LID or Non-LID	Sizing Method	Drainage Area (s.f.)	Impervious Area[3] (s.f.)	Pervious Area (Other) (s.f.)	% Onsite / Offsite Area Treated by LID or Non-LID TCM	Bioretention Area Provided (s.f.)	Overflow Riser Height (in)	Comments
A1	A1	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	8,420	8,400	20	1.14%	253	6	
A2	A2	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	7,742	7,398	344	1.05%	344	6	
A3	A3	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	11,615	11,427	188	1.57%	502	6	
A4	A4	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	8,810	8,442	368	1.19%	368	6	
A5	A5	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	8,593	7,531	1,062	1.16%	1,062	6	
A6	A6	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	10,804	10,428	376	1.46%	376	6	
B1	B1	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	6,241	5,782	459	0.84%	459	6	
B2	B2	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	6,351	6,351	0	0.86%	276	6	
B3	B3	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	9,341	8,870	471	1.26%	471	6	
B4	B4	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	7,490	7,207	283	1.01%	283	6	
B5	B5	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	7,173	7,173	0	0.97%	276	6	
B6	B6	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	9,582	8,890	692	1.29%	692	6	
B7	B7	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	5,573	5,327	246	0.75%	246	6	
B8	B8	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	6,351	6,351	0	0.86%	276	6	
B9	B9	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	7,518	7,208	310	1.02%	310	6	
B10	B10	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	9,958	9,958	0	1.34%	276	8	
B11	B11	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	13,962	12,642	1,320	1.89%	411	6	
B12	B12	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	16,397	15,269	1,128	2.21%	480	6	
SRA-B1	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	11,480	5,931	5,549	1.55%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
SRA-B2	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	11,986	6,989	4,997	1.62%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
C1	C1	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,768	1,709	59	0.24%	59	6	
C2	C2	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,631	1,531	100	0.22%	99	6	
C3	C3	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,197	2,104	93	0.30%	93	6	
C4	C4	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,705	1,297	408	0.23%	408	6	
C5	C5	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,515	1,470	45	0.20%	44	6	
C6	C6	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,006	961	45	0.14%	45	6	
C7	C7	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,069	1,024	45	0.14%	45	6	
C8	C8	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	991	947	44	0.13%	44	6	
C9	C9	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	968	924	44	0.13%	44	6	
C10	C10	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	836	792	44	0.11%	44	6	
C11	C11	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	795	750	45	0.11%	44	6	
C12	C12	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	793	750	43	0.11%	44	6	
C13	C13	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	814	770	44	0.11%	44	6	
C14	C14	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,026	982	44	0.14%	44	6	
C15	C15	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	442	398	44	0.06%	44	6	
C16	C16	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,864	2,003	861	0.39%	861	6	
C17	C17	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,500	2,296	204	0.34%	204	6	
C18	C18	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,497	1,325	172	0.20%	172	6	
C19	C19	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,391	2,274	117	0.32%	77	6	
C20	C20	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,739	1,644	95	0.23%	95	6	
C21.1 & C22.2	C22	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	10,356	9,808	548	1.40%	482	6	
C22.1 & C22.2	C22	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	6,336	5,885	451	0.86%	407	6	
C23	C23	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,772	1,682	90	0.24%	78	6	
C24	C24	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,149	1,101	48	0.16%	48	6	
C25	C25	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	3,204	3,070	134	0.43%	133	6	
C26	C26	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,111	2,029	82	0.29%	83	6	
C27	C27	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	737	651	86	0.10%	86	6	
C28	C28	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	756	656	100	0.10%	100	6	
C29	C29	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,520	1,432	88	0.21%	88	6	
C30	C30	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,472	1,384	88	0.20%	88	6	
C31	C31	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,718	1,652	66	0.23%	66	6	
C32	C32	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	908	848	60	0.12%	61	6	
C33	C33	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	3,201	3,201	0	0.43%	133	6	
C34	C34	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,003	1,915	88	0.27%	88	6	
C35	C35	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	734	633	101	0.10%	100	6	
C36	C36	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	744	645	99	0.10%	99	6	
C37	C37	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,966	1,879	87	0.27%	87	6	
C38	C38	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,617	1,529	88	0.22%	88	6	
C39	C39	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,162	2,066	96	0.29%	96	6	
C40	C40	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,885	2,744	141	0.39%	141	6	
SRA-C1	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	5,448	659	4,789	0.74%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
SRA-C2	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	3,184	839	2,345	0.43%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
SRA-C3	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	4,614	1,090	3,524	0.62%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.2

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TREATMENT CONTROL MEASURE SUMMARY TABLE CONTINUED

DMA #	TCM #	Location[1]	Treatment Type[2]	LID or Non-LID	Sizing Method	Drainage Area (s.f.)	Impervious Area[3] (s.f.)	Pervious Area (Other) (s.f.)	% Onsite / Offsite Area Treated by LID or Non-LID TCM	Bioretention Area Provided (s.f.)	Overflow Riser Height (in)	Comments
D1	D1	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,936	1,630	306	0.26%	306	6	
D2	D2	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,753	1,631	122	0.24%	95	6	
D3	D3	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,909	1,791	118	0.26%	95	6	
D4.1 & D4.2	D4	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	9,123	8,781	342	1.23%	291	6	
D5	D5	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,804	1,619	185	0.24%	185	6	
D6	D6	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	926	853	73	0.13%	73	6	
D7	D7	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,612	1,539	73	0.22%	73	6	
D8	D8	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,492	1,420	72	0.20%	73	6	
D9	D9	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,438	1,365	73	0.19%	73	6	
D10	D10	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,328	1,085	243	0.18%	243	6	
D11	D11	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,237	2,164	73	0.30%	73	6	
D12	D12	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,078	2,002	76	0.28%	75	6	
D13	D13	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,249	1,174	75	0.17%	75	6	
D14	D14	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	944	663	281	0.13%	280	6	
D15	D15	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	411	301	110	0.06%	109	6	
D16	D16	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	729	554	175	0.10%	175	6	
D17	D17	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,759	1,710	49	0.24%	56	6	
D18	D18	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,437	1,388	49	0.19%	56	6	
D19	D19	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,747	2,603	144	0.37%	144	6	
D20	D20	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,535	1,475	60	0.21%	60	6	
D21	D21	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,735	2,562	173	0.37%	172	6	
D22	D22	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,989	2,873	116	0.40%	116	6	
D23	D23	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,034	1,922	112	0.27%	112	6	
D24	D24	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,288	2,212	76	0.31%	75	6	
D25	D25	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,664	2,574	90	0.36%	90	6	
D26	D26	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,537	1,385	152	0.21%	153	6	
D27	D27	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,717	1,627	90	0.23%	90	6	
D28	D28	Onsite	Untreated	N/A	N/A	2,400	2,400	0	-	N/A	N/A	Pool area not treated. Will drain to sanitary sewer
SRA-D1	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	3,497	1,276	2,221	0.47%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
SRA-D2	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	5,153	1,198	3,955	0.70%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
E1	E1	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	13,093	12,618	475	1.77%	475	6	
E2	E2	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	8,759	8,495	264	1.18%	264	6	
E3.1 & E3.2	E3	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	5,008	4,746	262	0.68%	262	6	
E4.1 & E4.2	E4	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	5,356	5,172	184	0.72%	185	6	
E5.1 & E5.2	E5	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	14,194	13,458	736	1.92%	419	6	Flow-though planters to be connected via pipe and/or other mechanism under pavement to have planter act at one
E6.1 & E6.2	E6	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	15,002	13,892	1,110	2.03%	547	6	Flow-though planters to be connected via pipe and/or other mechanism under pavement to have planter act at one
E7	E7	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	7,900	7,900	0	1.07%	292	6	
E8	E8	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	2,169	2,169	0	0.29%	96	6	
E9	E9	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,419	1,419	0	0.19%	96	6	
E10	E10	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,251	1,251	0	0.17%	108	6	
E11	E11	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	1,039	1,039	0	0.14%	125	6	
1	1	Onsite	Bioretention unlined w/o underdrain	LID	3. Flow-Volume Combo	33,868	20,257	13,611	4.57%	1,156	6	
2	2	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	3,652	3,122	530	0.49%	109	6	
3	3	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	7,887	6,327	1,560	1.07%	289	6	
4	4	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	23,565	18,484	5,081	3.18%	509	6	
5	5	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	21,768	18,796	2,972	2.94%	726	6	
6	6	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	14,083	12,158	1,925	1.90%	526	6	Flow-though planters to be connected via pipe and/or other mechanism under pavement to have planter act at one
7	7	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	10,912	3,839	7,073	1.47%	515	6	
8	8	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	31,219	23,595	7,624	4.22%	800	6	To be coordinated with City of Menlo Park on requirements within Water Easement
9	9	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	9,191	7,626	1,565	1.24%	273	6	To be coordinated with City of Menlo Park on requirements within Water Easement
10	10	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	18,058	13,404	4,654	2.44%	419	6	To be coordinated with City of Menlo Park on requirements within Water Easement
11	11	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	24,585	18,626	5,959	3.32%	683	6	
12	12	Onsite	Flow-Through planter (concrete lined) w/ underdrain	LID	3. Flow-Volume Combo	11,225	10,534	691	1.52%	355	6	
SRA-1	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	18,754	6,321	12,433	2.53%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
SRA-2	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	8,054	3,665	4,389	1.09%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
SRA-3	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	69,018	29,249	39,769	9.32%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
SRA-4	N/A	Onsite	Self-retaining areas (landscaped)	LID	N/A	21,842	14,277	7,565	2.95%	N/A	N/A	Area has less than a 2:1 ratio of impervious area to the receiving pervious area
					Totals:	742,863	576,739	163,724	100.00%			

Footnotes:

1 Per the Municipal Regional Stormwater Permit, sidewalks and other parts of the right-of-way should be included in the new and/or replaced impervious surface calculation and treated as required

2 “Lined” refers to an impermeable liner placed on the bottom of a Bioretention basin or a concrete Flow-Through Planter, such that no infiltration into native soil occurs.

3 Gravel is considered as an impervious surface unless it is part of an infiltration trench.

4 DMA XX is not being treated but will be treated by Equivalent Treatment Area EQ-1. Area EQ-1 is equal to or greater than the required treatment area of DMA XX. EQ-1 is not required to be treated as it is [insert reason here]

5 Treatment type of Self-Treating or Self-Retaining should only be used with landscape based treatment. If previous pavement is proposed for Self-Treating or Retaining, use the Pervious Pavement selection.

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: A1

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	8,400	1.0	8,400
2-3	Pervious surface	20	0.1	2
	Total DMA Area (square feet) =	8,420		

2-4 *Total Effective Impervious Area (EIA)* 8,402 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 460 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 336.08 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 252.06 Square feet
5-3 Volume of treated runoff for area in Item 5-2 345.29 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 115.10 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 253 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 346.58 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 113.81 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 0.45 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches 5.40 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 253 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: A2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	7,398	1.0	7,398
2-3	Pervious surface	344	0.1	34
	Total DMA Area (square feet) =	7,742		

2-4 *Total Effective Impervious Area (EIA)* 7,432 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 407 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 297.296 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 222.972 Square feet
5-3 Volume of treated runoff for area in Item 5-2 305.44 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 101.81 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 344 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 471.23 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 -63.98 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 -0.19 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches -2.23 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 344 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: A3

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	11,427	1.0	11,427
2-3	Pervious surface	188	0.1	19
	Total DMA Area (square feet) =	11,615		

2-4 *Total Effective Impervious Area (EIA)* 11,446 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 627 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 457.832 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 343.374 Square feet
5-3 Volume of treated runoff for area in Item 5-2 470.38 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 156.79 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 502 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 687.67 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 -60.50 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 -0.12 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches -1.45 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 502 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: A4

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	8,442	1.0	8,442
2-3	Pervious surface	368	0.1	37
	Total DMA Area (square feet) =	8,810		

2-4 *Total Effective Impervious Area (EIA)* 8,479 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 465 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 339.152 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 254.364 Square feet
5-3 Volume of treated runoff for area in Item 5-2 348.44 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 116.15 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 368 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 504.11 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 -39.52 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 -0.11 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches -1.29 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 368 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: A5

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	7,531	1.0	7,531
2-3	Pervious surface	1,062	0.1	106
	Total DMA Area (square feet) =	8,593		

2-4 *Total Effective Impervious Area (EIA)* 7,637 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 418 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 305.488 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 229.116 Square feet
5-3 Volume of treated runoff for area in Item 5-2 313.86 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 104.62 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 1,062 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 1454.79 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 -1036.32 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 -0.98 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches -11.71 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 1,062 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: A6

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	10,428	1.0	10,428
2-3	Pervious surface	376	0.1	38
	Total DMA Area (square feet) =	10,804		

2-4 *Total Effective Impervious Area (EIA)* 10,466 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 573 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 418.624 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 313.968 Square feet
5-3 Volume of treated runoff for area in Item 5-2 430.09 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 143.36 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 376 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 515.07 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 58.39 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 0.16 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches 1.86 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 376 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B1

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	5,782	1.0	5,782
2-3	Pervious surface	459	0.1	46
	Total DMA Area (square feet) =	6,241		

2-4 *Total Effective Impervious Area (EIA)* 5,828 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 319 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 233.116 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 174.837 Square feet
5-3 Volume of treated runoff for area in Item 5-2 239.50 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 79.83 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 459 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 628.77 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 -309.43 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 -0.67 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches -8.09 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 459 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	6,351	1.0	6,351
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	6,351		

2-4 *Total Effective Impervious Area (EIA)* 6,351 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 348 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4) 254.04 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA) 190.53 Square feet
5-3 Volume of treated runoff for area in Item 5-2 261.00 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3 87.00 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2 276 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1 378.08 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3 -30.08 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1 -0.11 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches -1.31 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 276 Square feet (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

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STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.4

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B3

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	8,870	1.0	8,870
2-3	Pervious surface	471	0.1	47
	Total DMA Area (square feet) =	9,341		

2-4 *Total Effective Impervious Area (EIA)* 8,917 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 489 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 356.684 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 267.513 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 366.46 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 122.15 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 471 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 645.21 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -156.60 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.33 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -3.99 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 471 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B4

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	7,207	1.0	7,207
2-3	Pervious surface	283	0.1	28
	Total DMA Area (square feet) =	7,490		

2-4 *Total Effective Impervious Area (EIA)* 7,235 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 396 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 289.412 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 217.059 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 297.34 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 99.11 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 283 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 387.67 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: 8.78 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: 0.03 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: 0.37 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 283 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B5

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	7,173	1.0	7,173
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	7,173		

2-4 *Total Effective Impervious Area (EIA)* 7,173 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 393 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 286.92 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 215.19 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 294.78 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 98.26 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 276 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 378.08 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: 14.96 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: 0.05 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: 0.65 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 276 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B6

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	8,890	1.0	8,890
2-3	Pervious surface	692	0.1	69
	Total DMA Area (square feet) =	9,582		

2-4 *Total Effective Impervious Area (EIA)* 8,959 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 491 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 358.368 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 268.776 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 368.19 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 122.73 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 692 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 947.95 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -457.03 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.66 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -7.93 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 692 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B7

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	5,327	1.0	5,327
2-3	Pervious surface	246	0.1	25
	Total DMA Area (square feet) =	5,573		

2-4 *Total Effective Impervious Area (EIA)* 5,352 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 293 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 214.064 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 160.548 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 219.93 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 73.31 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 246 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 336.99 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -43.75 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.18 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -2.13 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 246 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B8

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	6,351	1.0	6,351
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	6,351		

2-4 *Total Effective Impervious Area (EIA)* 6,351 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 348 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 254.04 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 190.53 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 261.00 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 87.00 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 276 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 378.08 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -30.08 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.11 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -1.31 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 276 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B9

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	7,208	1.0	7,208
2-3	Pervious surface	310	0.1	31
	Total DMA Area (square feet) =	7,518		

2-4 *Total Effective Impervious Area (EIA)* 7,239 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 397 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 289.56 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 217.17 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 297.49 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 99.16 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 310 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 424.66 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -28.00 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.09 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -1.08 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 310 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B10

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	9,958	1.0	9,958
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	9,958		

2-4 *Total Effective Impervious Area (EIA)* 9,958 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 546 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 398.32 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 298.74 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 409.23 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 136.41 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 276 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 378.08 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: 167.56 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: 0.61 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: 7.29 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 276 Square feet (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

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Gehl

rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.5

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B11

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	12,642	1.0	12,642
2-3	Pervious surface	1,320	0.1	132
	Total DMA Area (square feet) =	13,962		

2-4 ***Total Effective Impervious Area (EIA)*** 12,774 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 700 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	510.96	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	383.22	Square feet
5-3	Volume of treated runoff for area in Item 5-2	524.96	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	174.99	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	411	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	563.01	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	136.93	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.33	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	4.00	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 411 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: B12

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	15,269	1.0	15,269
2-3	Pervious surface	1,128	0.1	113
	Total DMA Area (square feet) =	16,397		

2-4 ***Total Effective Impervious Area (EIA)*** 15,382 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 843 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	615.272	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	461.454	Square feet
5-3	Volume of treated runoff for area in Item 5-2	632.13	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	210.71	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	480	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	657.53	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	185.30	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.39	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	4.63	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 480 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C1

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,709	1.0	1,709
2-3	Pervious surface	59	0.1	6
	Total DMA Area (square feet) =	1,768		

2-4 ***Total Effective Impervious Area (EIA)*** 1,715 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 94 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	68.596	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	51.447	Square feet
5-3	Volume of treated runoff for area in Item 5-2	70.48	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	23.49	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	59	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	80.82	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	13.15	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.22	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	2.67	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 59 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,531	1.0	1,531
2-3	Pervious surface	100	0.1	10
	Total DMA Area (square feet) =	1,631		

2-4 ***Total Effective Impervious Area (EIA)*** 1,541 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 84 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	61.64	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	46.23	Square feet
5-3	Volume of treated runoff for area in Item 5-2	63.33	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	21.11	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	99	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	135.62	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-51.18	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.52	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-6.20	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 99 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C3

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,104	1.0	2,104
2-3	Pervious surface	93	0.1	9
	Total DMA Area (square feet) =	2,197		

2-4 ***Total Effective Impervious Area (EIA)*** 2,113 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 116 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	84.532	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	63.399	Square feet
5-3	Volume of treated runoff for area in Item 5-2	86.85	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	28.95	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	93	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	127.40	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-11.60	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.12	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-1.50	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 93 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C4

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,297	1.0	1,297
2-3	Pervious surface	408	0.1	41
	Total DMA Area (square feet) =	1,705		

2-4 ***Total Effective Impervious Area (EIA)*** 1,338 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 73 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	53.512	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	40.134	Square feet
5-3	Volume of treated runoff for area in Item 5-2	54.98	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	18.33	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	408	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	558.90	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-485.60	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-1.19	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-14.28	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 408 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C5

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,470	1.0	1,470
2-3	Pervious surface	45	0.1	5
	Total DMA Area (square feet) =	1,515		

2-4 ***Total Effective Impervious Area (EIA)*** 1,475 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 81 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	58.98	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	44.235	Square feet
5-3	Volume of treated runoff for area in Item 5-2	60.60	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	20.20	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	20.52	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.47	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	5.60	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C6

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	961	1.0	961
2-3	Pervious surface	45	0.1	5
	Total DMA Area (square feet) =	1,006		

2-4 ***Total Effective Impervious Area (EIA)*** 966 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 53 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	38.62	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	28.965	Square feet
5-3	Volume of treated runoff for area in Item 5-2	39.68	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	13.23	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	45	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	61.64	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-8.74	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.19	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-2.33	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 45 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

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Gehl

rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.6

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

Date: 1/29/2026 Time: 20:18 User: dshitanishi Style Table: Langan.stb Layout: C8.6 Document Code: 770730001-0301-CA101-0102

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C7

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,024	1.0	1,024
2-3	Pervious surface	45	0.1	5
	Total DMA Area (square feet) =	1,069		

2-4 ***Total Effective Impervious Area (EIA)*** 1,029 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 56 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	41.14	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	30.855	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	42.27	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	14.09	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	45	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	61.64	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-5.29	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.12	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-1.41	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 45 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C8

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	947	1.0	947
2-3	Pervious surface	44	0.1	4
	Total DMA Area (square feet) =	991		

2-4 ***Total Effective Impervious Area (EIA)*** 951 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 52 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	38.056	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	28.542	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	39.10	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	13.03	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-8.14	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.19	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-2.22	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C9

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	924	1.0	924
2-3	Pervious surface	44	0.1	4
	Total DMA Area (square feet) =	968		

2-4 ***Total Effective Impervious Area (EIA)*** 928 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 51 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	37.136	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	27.852	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	38.15	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	12.72	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-9.40	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.21	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-2.56	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C10

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	792	1.0	792
2-3	Pervious surface	44	0.1	4
	Total DMA Area (square feet) =	836		

2-4 ***Total Effective Impervious Area (EIA)*** 796 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 44 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	31.856	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	23.892	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	32.73	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	10.91	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-16.64	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.38	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-4.54	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C11

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	750	1.0	750
2-3	Pervious surface	45	0.1	5
	Total DMA Area (square feet) =	795		

2-4 ***Total Effective Impervious Area (EIA)*** 755 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 41 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	30.18	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	22.635	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	31.01	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	10.34	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-18.93	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.43	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-5.16	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C12

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	750	1.0	750
2-3	Pervious surface	43	0.1	4
	Total DMA Area (square feet) =	793		

2-4 ***Total Effective Impervious Area (EIA)*** 754 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 41 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	30.172	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	22.629	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	31.00	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	10.33	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-18.94	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.43	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-5.17	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C13

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	770	1.0	770
2-3	Pervious surface	44	0.1	4
	Total DMA Area (square feet) =	814		

2-4 ***Total Effective Impervious Area (EIA)*** 774 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 42 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	30.976	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	23.232	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	31.82	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	10.61	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-17.84	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.41	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-4.87	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C14

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	982	1.0	982
2-3	Pervious surface	44	0.1	4
	Total DMA Area (square feet) =	1,026		

2-4 ***Total Effective Impervious Area (EIA)*** 986 **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 54 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity 0.2 **Inches per hour**
4-2 Divide Item 3-2 by Item 4-1 3.29 **Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	39.456	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	29.592	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	40.54	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	13.51	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	44	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	60.27	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-6.22	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.14	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-1.70	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 44 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

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Gehl

rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.7

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

Date: 1/29/2026 Time: 20:18 User: dshitanishi Style Table: Langan.stb Layout: C8.7 Document Code: 770730001-0301-CA101-0102

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C15

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	398	1.0	398
2-3	Pervious surface	44	0.1	4
	Total DMA Area (square feet) =	442		

2-4 ***Total Effective Impervious Area (EIA)*** 402 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 22 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 16.096 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 12.072 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 16.54 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 5.51 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 44 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 60.27 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -38.22 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.87 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -10.42 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 44 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C16

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,003	1.0	2,003
2-3	Pervious surface	861	0.1	86
	Total DMA Area (square feet) =	2,864		

2-4 ***Total Effective Impervious Area (EIA)*** 2,089 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 114 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 83.564 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 62.673 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 85.85 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 28.62 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 861 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 1179.45 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -1064.98 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -1.24 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -14.84 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 861 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C17

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,296	1.0	2,296
2-3	Pervious surface	204	0.1	20
	Total DMA Area (square feet) =	2,500		

2-4 ***Total Effective Impervious Area (EIA)*** 2,316 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 127 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 92.656 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 69.492 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 95.19 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 31.73 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 204 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 279.45 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -152.53 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.75 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -8.97 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 204 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C18

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,325	1.0	1,325
2-3	Pervious surface	172	0.1	17
	Total DMA Area (square feet) =	1,497		

2-4 ***Total Effective Impervious Area (EIA)*** 1,342 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 74 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 53.688 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 40.266 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 55.16 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 18.39 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 172 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 235.62 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -162.07 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.94 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -11.31 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 172 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C19

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,274	1.0	2,274
2-3	Pervious surface	117	0.1	12
	Total DMA Area (square feet) =	2,391		

2-4 ***Total Effective Impervious Area (EIA)*** 2,286 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 125 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 91.428 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 68.571 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 93.93 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 31.31 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 77 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 105.48 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: 19.76 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: 0.26 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: 3.08 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 77 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C20

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,644	1.0	1,644
2-3	Pervious surface	95	0.1	10
	Total DMA Area (square feet) =	1,739		

2-4 ***Total Effective Impervious Area (EIA)*** 1,654 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 91 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 66.14 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 49.605 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 67.95 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 22.65 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 95 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 130.14 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -39.53 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.42 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -4.99 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 95 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C21.1 & C22.2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	9,808	1.0	9,808
2-3	Pervious surface	548	0.1	55
	Total DMA Area (square feet) =	10,356		

2-4 ***Total Effective Impervious Area (EIA)*** 9,863 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 540 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 394.512 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 295.884 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 405.32 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 135.11 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 482 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 660.27 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -119.85 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.25 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -2.98 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 482 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C22.1 & C22.2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	5,885	1.0	5,885
2-3	Pervious surface	451	0.1	45
	Total DMA Area (square feet) =	6,336		

2-4 ***Total Effective Impervious Area (EIA)*** 5,930 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 325 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1 4% of DMA EIA (Item 2-4): 237.204 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 177.903 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 243.70 Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1 Subtract Item 5-3 from Item 3-3: 81.23 Cubic feet (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 Feet (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 Inches (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1 Enter an area larger than Item 5-2: 407 Sq.ft. (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 557.53 Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -232.60 Cubic feet (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.57 Feet (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -6.86 Inches (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 407 Square feet (Either Item 5-2 or final amount in Item 7-1)

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rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.8

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C23

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,682	1.0	1,682
2-3	Pervious surface	90	0.1	9
	Total DMA Area (square feet) =	1,772		

2-4 *Total Effective Impervious Area (EIA)* 1,691 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 93 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	67.64	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	50.73	Square feet
5-3	Volume of treated runoff for area in Item 5-2	69.49	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	23.16	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	78	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	106.85	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-14.19	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.18	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-2.18	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	78	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C24

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,101	1.0	1,101
2-3	Pervious surface	48	0.1	5
	Total DMA Area (square feet) =	1,149		

2-4 *Total Effective Impervious Area (EIA)* 1,106 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 61 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	44.232	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	33.174	Square feet
5-3	Volume of treated runoff for area in Item 5-2	45.44	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	15.15	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	48	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	65.75	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-5.16	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.11	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-1.29	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	48	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C25

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	3,070	1.0	3,070
2-3	Pervious surface	134	0.1	13
	Total DMA Area (square feet) =	3,204		

2-4 *Total Effective Impervious Area (EIA)* 3,083 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 169 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	123.336	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	92.502	Square feet
5-3	Volume of treated runoff for area in Item 5-2	126.72	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	42.24	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	133	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	182.19	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-13.24	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.10	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-1.19	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	133	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C26

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,029	1.0	2,029
2-3	Pervious surface	82	0.1	8
	Total DMA Area (square feet) =	2,111		

2-4 *Total Effective Impervious Area (EIA)* 2,037 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 112 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	81.488	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	61.116	Square feet
5-3	Volume of treated runoff for area in Item 5-2	83.72	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	27.91	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	83	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	113.70	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-2.07	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.02	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-0.30	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	83	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C27

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	651	1.0	651
2-3	Pervious surface	86	0.1	9
	Total DMA Area (square feet) =	737		

2-4 *Total Effective Impervious Area (EIA)* 660 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 36 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	26.384	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	19.788	Square feet
5-3	Volume of treated runoff for area in Item 5-2	27.11	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	9.04	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	86	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	117.81	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-81.67	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.95	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-11.40	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	86	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C28

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	656	1.0	656
2-3	Pervious surface	100	0.1	10
	Total DMA Area (square feet) =	756		

2-4 *Total Effective Impervious Area (EIA)* 666 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 36 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	26.64	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	19.98	Square feet
5-3	Volume of treated runoff for area in Item 5-2	27.37	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	9.12	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	100	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	136.99	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-100.49	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-1.00	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-12.06	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	100	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C29

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,432	1.0	1,432
2-3	Pervious surface	88	0.1	9
	Total DMA Area (square feet) =	1,520		

2-4 *Total Effective Impervious Area (EIA)* 1,441 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 79 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	57.632	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	43.224	Square feet
5-3	Volume of treated runoff for area in Item 5-2	59.21	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	19.74	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	88	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	120.55	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-41.60	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.47	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-5.67	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	88	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C30

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,384	1.0	1,384
2-3	Pervious surface	88	0.1	9
	Total DMA Area (square feet) =	1,472		

2-4 *Total Effective Impervious Area (EIA)* 1,393 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 76 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	55.712	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	41.784	Square feet
5-3	Volume of treated runoff for area in Item 5-2	57.24	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	19.08	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	88	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	120.55	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-44.23	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.50	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-6.03	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	88	Square feet (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

Gensler

Gehl

rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.9

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C31

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,652	1.0	1,652
2-3	Pervious surface	66	0.1	7
	Total DMA Area (square feet) =	1,718		

2-4 ***Total Effective Impervious Area (EIA)*** 1,659 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 91 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 66.344 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 49.758 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 68.16 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 22.72 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 66 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 90.41 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: 0.47 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: 0.01 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: 0.09 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 66 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C32

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	848	1.0	848
2-3	Pervious surface	60	0.1	6
	Total DMA Area (square feet) =	908		

2-4 ***Total Effective Impervious Area (EIA)*** 854 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 47 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 34.16 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 25.62 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 35.10 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 11.70 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 61 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 83.56 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -36.77 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.60 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -7.23 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 61 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C33

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	3,201	1.0	3,201
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	3,201		

2-4 ***Total Effective Impervious Area (EIA)*** 3,201 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 175 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 128.04 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 96.03 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 131.55 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 43.85 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 133 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 182.19 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -6.79 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.05 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -0.61 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 133 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C34

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,915	1.0	1,915
2-3	Pervious surface	88	0.1	9
	Total DMA Area (square feet) =	2,003		

2-4 ***Total Effective Impervious Area (EIA)*** 1,924 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 105 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 76.952 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 57.714 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 79.06 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 26.35 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 88 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 120.55 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -15.13 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.17 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -2.06 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 88 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C35

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	633	1.0	633
2-3	Pervious surface	101	0.1	10
	Total DMA Area (square feet) =	734		

2-4 ***Total Effective Impervious Area (EIA)*** 643 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 35 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 25.724 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 19.293 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 26.43 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 8.81 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 100 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 136.99 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -101.75 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -1.02 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -12.21 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 100 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C36

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	645	1.0	645
2-3	Pervious surface	99	0.1	10
	Total DMA Area (square feet) =	744		

2-4 ***Total Effective Impervious Area (EIA)*** 655 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 36 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 26.196 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 19.647 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 26.91 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 8.97 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 99 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 135.62 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -99.73 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -1.01 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -12.09 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 99 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C37

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,879	1.0	1,879
2-3	Pervious surface	87	0.1	9
	Total DMA Area (square feet) =	1,966		

2-4 ***Total Effective Impervious Area (EIA)*** 1,888 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 103 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 75.508 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 56.631 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 77.58 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 25.86 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 87 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 119.18 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -15.74 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.18 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -2.17 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 87 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information
1-1 Project Name: 345 Middlefield
1-2 City application ID:
1-3 Site Address or APN: 062-390-700 & 062-421-070
1-4 Tract or Parcel Map No:
1-5 Rainfall Region: 4
1-6 Region Mean Annual Precipitation (MAP): 14.60
1-7 Site Mean Annual Precipitation (MAP): 15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03
(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)
2-1 Name of DMA: C38

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,529	1.0	1,529
2-3	Pervious surface	88	0.1	9
	Total DMA Area (square feet) =	1,617		

2-4 ***Total Effective Impervious Area (EIA)*** 1,538 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 84 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event
4-1 Rainfall intensity: 0.2 Inches per hour
4-2 Divide Item 3-2 by Item 4-1: 3.29 Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure
5-1 4% of DMA EIA (Item 2-4): 61.512 Square feet
5-2 Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA): 46.134 Square feet
5-3 Volume of treated runoff for area in Item 5-2: 63.20 **Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area
6-1 Subtract Item 5-3 from Item 3-3: 21.07 **Cubic feet** (Amount of runoff to be stored in ponding area)
6-2 Divide Item 6-1 by Item 5-2: 0.46 **Feet** (Depth of stored runoff in surface ponding area)
6-3 Convert Item 6-2 from feet to inches: 5.48 **Inches** (Depth of stored runoff in surface ponding area)
6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure
7-1 Enter an area larger than Item 5-2: 88 **Sq.ft.** (enter larger area if you need less ponding depth.)
7-2 Volume of treated runoff for area in Item 7-1: 120.55 **Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3 Subtract Item 7-2 from Item 3-3: -36.28 **Cubic feet** (Amount of runoff to be stored in ponding area)
7-4 Divide Item 7-3 by Item 7-1: -0.41 **Feet** (Depth of stored runoff in surface ponding area)
7-5 Convert Item 7-4 from ft. to inches: -4.95 **Inches** (Depth of stored runoff in surface ponding area)
7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA
8-1 Final surface area of treatment: 88 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

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STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.10

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	Click here for maps
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	***MAP adjustment factor is automatically calculated as:***	1.03	

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: C39

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,066	1.0	2,066
2-3	Pervious surface	96	0.1	10
	Total DMA Area (square feet) =	2,162		
2-4		***Total Effective Impervious Area (EIA)***	2,076	**Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1	***Unit basin storage volume from Table 5-3:***	0.64	
	(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)		
3-2	***Adjusted unit basin storage volume:***	0.66	Inches
	(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)		
3-3	***Required Capture Volume (in cubic feet):***	114	Cubic feet
	(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)		

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall Intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	83.024	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	62.268	Square feet
5-3	Volume of treated runoff for area in Item 5-2	85.30	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	28.43	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	96	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	131.51	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-17.78	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.19	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-2.22	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	96	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	Click here for maps
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	***MAP adjustment factor is automatically calculated as:***	1.03	

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D3

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,791	1.0	1,791
2-3	Pervious surface	118	0.1	12
	Total DMA Area (square feet) =	1,909		
2-4		***Total Effective Impervious Area (EIA)***	1,803	**Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1	***Unit basin storage volume from Table 5-3:***	0.64	
	(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)		
3-2	***Adjusted unit basin storage volume:***	0.66	Inches
	(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)		
3-3	***Required Capture Volume (in cubic feet):***	99	Cubic feet
	(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)		

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall Intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	72.112	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	54.084	Square feet
5-3	Volume of treated runoff for area in Item 5-2	74.09	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	24.70	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	95	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	130.14	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-31.35	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.33	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-3.96	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	95	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	Click here for maps
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	***MAP adjustment factor is automatically calculated as:***	1.03	

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D4.1 & D4.2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	8,781	1.0	8,781
2-3	Pervious surface	342	0.1	34
	Total DMA Area (square feet) =	9,123		
2-4		***Total Effective Impervious Area (EIA)***	8,815	**Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1	***Unit basin storage volume from Table 5-3:***	0.64	
	(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)		
3-2	***Adjusted unit basin storage volume:***	0.66	Inches
	(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)		
3-3	***Required Capture Volume (in cubic feet):***	483	Cubic feet
	(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)		

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall Intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	352.608	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	264.456	Square feet
5-3	Volume of treated runoff for area in Item 5-2	362.27	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	120.76	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	291	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	398.63	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	84.39	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.29	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	3.48	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	291	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	Click here for maps
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	***MAP adjustment factor is automatically calculated as:***	1.03	

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D5

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,619	1.0	1,619
2-3	Pervious surface	185	0.1	19
	Total DMA Area (square feet) =	1,804		
2-4		***Total Effective Impervious Area (EIA)***	1,638	**Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1	***Unit basin storage volume from Table 5-3:***	0.64	
	(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)		
3-2	***Adjusted unit basin storage volume:***	0.66	Inches
	(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)		
3-3	***Required Capture Volume (in cubic feet):***	90	Cubic feet
	(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)		

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall Intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	66.424	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	49.818	Square feet
5-3	Volume of treated runoff for area in Item 5-2	68.24	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	22.75	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	185	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	253.42	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-163.70	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.88	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-10.62	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	185	Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	Click here for maps
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	***MAP adjustment factor is automatically calculated as:***	1.03	

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D6

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	853	1.0	853
2-3	Pervious surface	73	0.1	7
	Total DMA Area (square feet) =	926		
2-4		***Total Effective Impervious Area (EIA)***	860	**Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1	***Unit basin storage volume from Table 5-3:***	0.64	
	(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)		
3-2	***Adjusted unit basin storage volume:***	0.66	Inches
	(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)		
3-3	***Required Capture Volume (in cubic feet):***	47	Cubic feet
	(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)		

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall Intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	34.412	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	25.809	Square feet
5-3	Volume of treated runoff for area in Item 5-2	35.35	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	11.78	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	95	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	130.14	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-40.10	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.42	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-5.07	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	73	Square feet (Either Item 5-2 or final amount in Item 7-1)

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WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.11

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D7

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,539	1.0	1,539
2-3	Pervious surface	73	0.1	7
	Total DMA Area (square feet) =	1,612		

2-4 *Total Effective Impervious Area (EIA)* 1,546 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 85 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	61.852	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	46.389	Square feet
5-3	Volume of treated runoff for area in Item 5-2	63.55	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	21.18	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	73	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	100.00	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-15.27	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.21	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-2.51	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 73 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D8

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,420	1.0	1,420
2-3	Pervious surface	72	0.1	7
	Total DMA Area (square feet) =	1,492		

2-4 *Total Effective Impervious Area (EIA)* 1,427 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 78 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	57.088	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	42.816	Square feet
5-3	Volume of treated runoff for area in Item 5-2	58.65	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	19.55	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	73	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	100.00	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-21.80	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.30	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-3.58	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 73 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D9

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,365	1.0	1,365
2-3	Pervious surface	73	0.1	7
	Total DMA Area (square feet) =	1,438		

2-4 *Total Effective Impervious Area (EIA)* 1,372 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 75 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	54.892	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	41.169	Square feet
5-3	Volume of treated runoff for area in Item 5-2	56.40	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	18.80	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	73	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	100.00	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-24.81	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.34	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-4.08	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 73 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D10

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,085	1.0	1,085
2-3	Pervious surface	243	0.1	24
	Total DMA Area (square feet) =	1,328		

2-4 *Total Effective Impervious Area (EIA)* 1,109 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 61 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	44.372	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	33.279	Square feet
5-3	Volume of treated runoff for area in Item 5-2	45.59	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	15.20	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	243	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	332.88	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-272.09	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-1.12	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-13.44	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 243 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D11

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,164	1.0	2,164
2-3	Pervious surface	73	0.1	7
	Total DMA Area (square feet) =	2,237		

2-4 *Total Effective Impervious Area (EIA)* 2,171 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 119 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	86.852	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	65.139	Square feet
5-3	Volume of treated runoff for area in Item 5-2	89.23	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	29.74	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	73	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	100.00	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	18.98	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.26	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	3.12	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 73 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D12

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,002	1.0	2,002
2-3	Pervious surface	76	0.1	8
	Total DMA Area (square feet) =	2,078		

2-4 *Total Effective Impervious Area (EIA)* 2,010 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 110 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	80.384	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	60.288	Square feet
5-3	Volume of treated runoff for area in Item 5-2	82.59	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	27.53	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	75	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	102.74	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	7.38	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.10	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	1.18	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 75 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D13

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,174	1.0	1,174
2-3	Pervious surface	75	0.1	8
	Total DMA Area (square feet) =	1,249		

2-4 *Total Effective Impervious Area (EIA)* 1,182 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 65 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	47.26	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	35.445	Square feet
5-3	Volume of treated runoff for area in Item 5-2	48.55	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	16.18	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	75	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	102.74	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-38.00	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.51	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-6.08	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 75 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

Item	Description	Value
1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 *MAP adjustment factor is automatically calculated as:* 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.) Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D14

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

Item	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	663	1.0	663
2-3	Pervious surface	281	0.1	28
	Total DMA Area (square feet) =	944		

2-4 *Total Effective Impervious Area (EIA)* 691 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 *Unit basin storage volume from Table 5-3:* 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 *Adjusted unit basin storage volume:* 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 *Required Capture Volume (in cubic feet):* 38 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

Item	Description	Value	Units
4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

Item	Description	Value	Units
5-1	4% of DMA EIA (Item 2-4)	27.644	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	20.733	Square feet
5-3	Volume of treated runoff for area in Item 5-2	28.40	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

Item	Description	Value	Units
6-1	Subtract Item 5-3 from Item 3-3	9.47	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

Item	Description	Value	Units
7-1	Enter an area larger than Item 5-2	280	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	383.56	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-345.69	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-1.23	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-14.82	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 280 Square feet (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

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Gehl

rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.12

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D15

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	301	1.0	301
2-3	Pervious surface	110	0.1	11
	Total DMA Area (square feet) =	411		

2-4 ***Total Effective Impervious Area (EIA)*** 312 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 17 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	12.48	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	9.36	Square feet
5-3	Volume of treated runoff for area in Item 5-2	12.82	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	4.27	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	109	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	149.32	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-132.22	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-1.21	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-14.56	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 109 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D16

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	554	1.0	554
2-3	Pervious surface	175	0.1	18
	Total DMA Area (square feet) =	729		

2-4 ***Total Effective Impervious Area (EIA)*** 572 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 31 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	22.86	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	17.145	Square feet
5-3	Volume of treated runoff for area in Item 5-2	23.49	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	7.83	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	175	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	239.73	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-208.41	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-1.19	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-14.29	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 175 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D17

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,710	1.0	1,710
2-3	Pervious surface	49	0.1	5
	Total DMA Area (square feet) =	1,759		

2-4 ***Total Effective Impervious Area (EIA)*** 1,715 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 94 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	68.596	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	51.447	Square feet
5-3	Volume of treated runoff for area in Item 5-2	70.48	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	23.49	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	56	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	76.71	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	17.25	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.31	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	3.70	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 56 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D18

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,388	1.0	1,388
2-3	Pervious surface	49	0.1	5
	Total DMA Area (square feet) =	1,437		

2-4 ***Total Effective Impervious Area (EIA)*** 1,393 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 76 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	55.716	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	41.787	Square feet
5-3	Volume of treated runoff for area in Item 5-2	57.24	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	19.08	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	56	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	76.71	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-0.39	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.01	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-0.08	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 56 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D19

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,603	1.0	2,603
2-3	Pervious surface	144	0.1	14
	Total DMA Area (square feet) =	2,747		

2-4 ***Total Effective Impervious Area (EIA)*** 2,617 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 143 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	104.696	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	78.522	Square feet
5-3	Volume of treated runoff for area in Item 5-2	107.56	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	35.85	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	144	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	197.26	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-53.84	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.37	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-4.49	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 144 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D20

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,475	1.0	1,475
2-3	Pervious surface	60	0.1	6
	Total DMA Area (square feet) =	1,535		

2-4 ***Total Effective Impervious Area (EIA)*** 1,481 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 81 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	59.24	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	44.43	Square feet
5-3	Volume of treated runoff for area in Item 5-2	60.86	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	20.29	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	60	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	82.19	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-1.04	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.02	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-0.21	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 60 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D21

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,562	1.0	2,562
2-3	Pervious surface	173	0.1	17
	Total DMA Area (square feet) =	2,735		

2-4 ***Total Effective Impervious Area (EIA)*** 2,579 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 141 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	103.172	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	77.379	Square feet
5-3	Volume of treated runoff for area in Item 5-2	106.00	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	35.33	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	172	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	235.62	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-94.28	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.55	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-6.58	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 172 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: D22

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,873	1.0	2,873
2-3	Pervious surface	116	0.1	12
	Total DMA Area (square feet) =	2,989		

2-4 ***Total Effective Impervious Area (EIA)*** 2,885 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 158 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	115.384	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	86.538	Square feet
5-3	Volume of treated runoff for area in Item 5-2	118.55	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	39.52	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	116	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	158.90	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-0.84	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.01	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-0.09	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: 116 Square feet (Either Item 5-2 or final amount in Item 7-1)

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WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.13

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

Click here for maps

1-8 ***MAP adjustment factor is automatically calculated as:*** **1.03**

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **D23**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,922	1.0	1,922
2-3	Pervious surface	112	0.1	11
	Total DMA Area (square feet) =	2,034	***Total Effective Impervious Area (EIA)***	1,933 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **106** Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall Intensity: **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1: **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	77.328	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	57.996	Square feet
5-3	Volume of treated runoff for area in Item 5-2	79.45	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	26.48	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	112	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	153.42	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-47.50	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.42	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-5.09	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets &target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: **112** Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

Click here for maps

1-8 ***MAP adjustment factor is automatically calculated as:*** **1.03**

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **D27**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,627	1.0	1,627
2-3	Pervious surface	90	0.1	9
	Total DMA Area (square feet) =	1,717	***Total Effective Impervious Area (EIA)***	1,636 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **90** Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall Intensity: **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1: **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	65.44	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	49.08	Square feet
5-3	Volume of treated runoff for area in Item 5-2	67.23	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	22.41	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	90	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	123.29	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-33.64	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.37	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-4.49	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets &target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: **90** Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

Click here for maps

1-8 ***MAP adjustment factor is automatically calculated as:*** **1.03**

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **E1**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	12,618	1.0	12,618
2-3	Pervious surface	475	0.1	48
	Total DMA Area (square feet) =	13,093	***Total Effective Impervious Area (EIA)***	12,666 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **694** Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall Intensity: **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1: **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	506.62	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	379.965	Square feet
5-3	Volume of treated runoff for area in Item 5-2	520.50	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	173.50	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	475	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	650.68	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	43.32	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.09	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	1.09	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets &target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: **475** Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

Click here for maps

1-8 ***MAP adjustment factor is automatically calculated as:*** **1.03**

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **E2**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	8,495	1.0	8,495
2-3	Pervious surface	264	0.1	26
	Total DMA Area (square feet) =	8,759	***Total Effective Impervious Area (EIA)***	8,521 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **467** Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall Intensity: **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1: **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	340.856	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	255.642	Square feet
5-3	Volume of treated runoff for area in Item 5-2	350.19	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	116.73	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	264	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	361.64	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	105.28	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.40	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	4.79	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets &target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: **264** Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named 'Guidance from Chapter 5'.
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

Click here for maps

1-8 ***MAP adjustment factor is automatically calculated as:*** **1.03**

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **E3.1 & E3.2**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	4,746	1.0	4,746
2-3	Pervious surface	262	0.1	26
	Total DMA Area (square feet) =	5,008	***Total Effective Impervious Area (EIA)***	4,772 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **261** Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall Intensity: **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1: **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	190.888	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	143.166	Square feet
5-3	Volume of treated runoff for area in Item 5-2	196.12	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	65.37	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	153	Sq.Ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	209.59	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-132.87	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.87	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-10.42	Inches (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets &target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		

(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment: **153** Square feet (Either Item 5-2 or final amount in Item 7-1)

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WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.14

Date: 1/29/2026 Time: 20:19 User: dshitanishi Style Table: Langan.stb Layout: C8.14 Document Code: 770730001-0301-CA101-0102

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E4.1 & E4.2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	5,172	1.0	5,172
2-3	Pervious surface	184	0.1	18
	Total DMA Area (square feet) =	5,356		

2-4 *Total Effective Impervious Area (EIA)* 5,190 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 284 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	207.616	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	155.712	Square feet
5-3	Volume of treated runoff for area in Item 5-2	213.30	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	71.10	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	185	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	253.42	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	30.98	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.17	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	2.01	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 185 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E5.1 & E5.2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	13,458	1.0	13,458
2-3	Pervious surface	736	0.1	74
	Total DMA Area (square feet) =	14,194		

2-4 *Total Effective Impervious Area (EIA)* 13,532 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 741 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	541.264	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	405.948	Square feet
5-3	Volume of treated runoff for area in Item 5-2	556.09	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	185.36	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	419	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	573.97	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	167.48	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.40	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	4.80	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 419 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E6.1 & E6.2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	13,892	1.0	13,892
2-3	Pervious surface	1,110	0.1	111
	Total DMA Area (square feet) =	15,002		

2-4 *Total Effective Impervious Area (EIA)* 14,003 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 767 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	560.12	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	420.09	Square feet
5-3	Volume of treated runoff for area in Item 5-2	575.47	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	191.82	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	547	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	749.32	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	17.97	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.03	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	0.39	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 547 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E7

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	7,900	1.0	7,900
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	7,900		

2-4 *Total Effective Impervious Area (EIA)* 7,900 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 433 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	316	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	237	Square feet
5-3	Volume of treated runoff for area in Item 5-2	324.66	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	108.22	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	292	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	400.00	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	32.88	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.11	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	1.35	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 292 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E8

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	2,169	1.0	2,169
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	2,169		

2-4 *Total Effective Impervious Area (EIA)* 2,169 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 119 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	86.76	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	65.07	Square feet
5-3	Volume of treated runoff for area in Item 5-2	89.14	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	29.71	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	96	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	131.51	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-12.66	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.13	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-1.58	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 96 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E9

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,419	1.0	1,419
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	1,419		

2-4 *Total Effective Impervious Area (EIA)* 1,419 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 78 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	56.76	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	42.57	Square feet
5-3	Volume of treated runoff for area in Item 5-2	58.32	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	19.44	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	96	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	131.51	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-53.75	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.56	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-6.72	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 96 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E10

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,251	1.0	1,251
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	1,251		

2-4 *Total Effective Impervious Area (EIA)* 1,251 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 69 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	50.04	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	37.53	Square feet
5-3	Volume of treated runoff for area in Item 5-2	51.41	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	17.14	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	108	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	147.95	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-79.40	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.74	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-8.82	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 108 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: E11

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	1,039	1.0	1,039
2-3	Pervious surface	0	0.1	0
	Total DMA Area (square feet) =	1,039		

2-4 *Total Effective Impervious Area (EIA)* 1,039 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 57 **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	41.56	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	31.17	Square feet
5-3	Volume of treated runoff for area in Item 5-2	42.70	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	14.23	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	125	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	171.23	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-114.30	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.91	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-10.97	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 125 **Square feet** (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

Gensler

Gehl

rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.15

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 1

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	20,257	1.0	20,257
2-3	Pervious surface	13,611	0.1	1,361
	Total DMA Area (square feet) =	33,868		

2-4 *Total Effective Impervious Area (EIA)* 21,618 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 1,185 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	864.724	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	648.543	Square feet
5-3	Volume of treated runoff for area in Item 5-2	888.42	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	296.14	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	1,156	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	1583.56	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-399.01	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.35	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-4.14	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 1,156 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 2

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	3,122	1.0	3,122
2-3	Pervious surface	530	0.1	53
	Total DMA Area (square feet) =	3,652		

2-4 *Total Effective Impervious Area (EIA)* 3,175 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 174 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	127	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	95.25	Square feet
5-3	Volume of treated runoff for area in Item 5-2	130.48	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	43.49	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	109	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	149.32	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	24.66	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.23	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	2.71	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 109 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 3

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	6,327	1.0	6,327
2-3	Pervious surface	1,560	0.1	156
	Total DMA Area (square feet) =	7,887		

2-4 *Total Effective Impervious Area (EIA)* 6,483 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 355 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	259.32	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	194.49	Square feet
5-3	Volume of treated runoff for area in Item 5-2	266.42	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	88.81	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	289	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	395.89	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-40.66	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.14	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-1.69	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 289 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 4

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	18,484	1.0	18,484
2-3	Pervious surface	5,081	0.1	508
	Total DMA Area (square feet) =	23,565		

2-4 *Total Effective Impervious Area (EIA)* 18,992 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 1,041 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	759.684	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	569.763	Square feet
5-3	Volume of treated runoff for area in Item 5-2	780.50	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	260.17	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	509	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	697.26	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	343.40	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.67	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	8.10	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 509 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 5

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	12,158	1.0	12,158
2-3	Pervious surface	1,925	0.1	193
	Total DMA Area (square feet) =	14,083		

2-4 *Total Effective Impervious Area (EIA)* 12,351 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 677 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	494.02	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	370.515	Square feet
5-3	Volume of treated runoff for area in Item 5-2	507.55	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	169.18	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	726	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	994.52	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-317.78	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.44	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-5.25	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 726 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 6

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	3,839	1.0	3,839
2-3	Pervious surface	7,073	0.1	707
	Total DMA Area (square feet) =	10,912		

2-4 *Total Effective Impervious Area (EIA)* 4,546 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 249 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	181.852	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	136.389	Square feet
5-3	Volume of treated runoff for area in Item 5-2	186.83	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	62.28	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	526	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	720.55	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-471.44	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.90	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-10.76	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 526 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 7

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	3,839	1.0	3,839
2-3	Pervious surface	7,073	0.1	707
	Total DMA Area (square feet) =	10,912		

2-4 *Total Effective Impervious Area (EIA)* 4,546 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 249 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	181.852	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	136.389	Square feet
5-3	Volume of treated runoff for area in Item 5-2	186.83	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	62.28	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	515	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	705.48	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	-456.37	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	-0.89	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	-10.63	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 515 Square feet (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield
1-2	City application ID:	
1-3	Site Address or APN:	062-390-700 & 062-421-070
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	4
1-6	Region Mean Annual Precipitation (MAP)	14.60
1-7	Site Mean Annual Precipitation (MAP)	15

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** 1.03

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: 8

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	23,595	1.0	23,595
2-3	Pervious surface	7,624	0.1	762
	Total DMA Area (square feet) =	31,219		

2-4 *Total Effective Impervious Area (EIA)* 24,357 Square feet

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 24.4"	0.86"
3	Half Moon Bay, 25.92"	0.82"
4	Palo Alto, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.85"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** 0.64
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** 0.66 Inches
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** 1,335 Cubic feet
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	0.2	Inches per hour
4-2	Divide Item 3-2 by Item 4-1	3.29	Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	974.296	Square feet
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	730.722	Square feet
5-3	Volume of treated runoff for area in Item 5-2	1000.99	Cubic feet (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	333.66	Cubic feet (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	Feet (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	Inches (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	800	Sq.ft. (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	1095.89	Cubic feet (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	238.76	Cubic feet (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.30	Feet (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	3.58	Inches (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment 800 Square feet (Either Item 5-2 or final amount in Item 7-1)

PRESIDIO BAY

Gensler

Gehl

rg-architecture

STUDIO-MLA

WATRY DESIGN, INC.
Architects • Engineers • Parking Planners

Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.16

Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

1/27/2026 2:24:00 PM

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Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	*MAP adjustment factor is automatically calculated as:*	1.03	

The calculations presented here are based on the **combination flow and volume using method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-2, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **9**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	7,626	1.0	7,626
2-3	Pervious surface	1,565	0.1	157
	Total DMA Area (square feet) =	9,191		

2-4 ***Total Effective Impervious Area (EIA)*** = **7,783** **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 34.4"	0.88"
3	Half Moon Bay, 25.92"	0.82"
4	Pine Alta, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.86"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **426** **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity = **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1 = **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	311.3	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	233.475	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	319.83	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	106.61	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	273	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	373.97	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	52.47	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.19	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	2.31	**Inches** (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment = **273** **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	*MAP adjustment factor is automatically calculated as:*	1.03	

The calculations presented here are based on the **combination flow and volume using method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-2, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **10**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	13,404	1.0	13,404
2-3	Pervious surface	4,654	0.1	465
	Total DMA Area (square feet) =	18,058		

2-4 ***Total Effective Impervious Area (EIA)*** = **13,869** **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 34.4"	0.88"
3	Half Moon Bay, 25.92"	0.82"
4	Pine Alta, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.86"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **760** **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity = **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1 = **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	554.776	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	416.082	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	569.98	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	189.99	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	419	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	573.97	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	185.99	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.44	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	5.33	**Inches** (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment = **419** **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	*MAP adjustment factor is automatically calculated as:*	1.03	

The calculations presented here are based on the **combination flow and volume using method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-2, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **11**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	18,626	1.0	18,626
2-3	Pervious surface	5,959	0.1	596
	Total DMA Area (square feet) =	24,585		

2-4 ***Total Effective Impervious Area (EIA)*** = **19,222** **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 34.4"	0.88"
3	Half Moon Bay, 25.92"	0.82"
4	Pine Alta, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.86"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **1,053** **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity = **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1 = **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	768.876	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	576.657	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	789.94	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	263.31	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	683	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	935.62	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	117.64	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.17	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	2.07	**Inches** (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment = **683** **Square feet** (Either Item 5-2 or final amount in Item 7-1)

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	345 Middlefield	
1-2	City application ID:	062-390-700 & 062-421-070	
1-3	Site Address or APN:		
1-4	Tract or Parcel Map No:		
1-5	Rainfall Region	4	
1-6	Region Mean Annual Precipitation (MAP)	14.60	
1-7	Site Mean Annual Precipitation (MAP)	15	
1-8	*MAP adjustment factor is automatically calculated as:*	1.03	

The calculations presented here are based on the **combination flow and volume using method** provided in the Countywide Program's C.3 Technical Guidance, Version 5.0 (2016). The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, shown in Table 5-2, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **12**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	10,534	1.0	10,534
2-3	Pervious surface	691	0.1	69
	Total DMA Area (square feet) =	11,225		

2-4 ***Total Effective Impervious Area (EIA)*** = **10,603** **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9"	2.04"
2	La Honda, 34.4"	0.88"
3	Half Moon Bay, 25.92"	0.82"
4	Pine Alta, 14.6"	0.64"
5	San Francisco, 21.0"	0.73"
6	San Francisco airport, 20.1"	0.86"
7	San Francisco Oceanside, 19.3"	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.66** **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **581** **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1 Rainfall intensity = **0.2** Inches per hour

4-2 Divide Item 3-2 by Item 4-1 = **3.29** Hours of Rain Event Duration

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	424.124	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	318.093	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	435.74	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	145.25	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	0.46	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	5.48	**Inches** (Depth of stored runoff in surface ponding area)
6-4	If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	355	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	486.30	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	94.69	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	0.27	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	3.20	**Inches** (Depth of stored runoff in surface ponding area)
7-6	If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.		
	(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)		

8.0 Surface Area of Treatment Measure for DMA

8-1 Final surface area of treatment = **355** **Square feet** (Either Item 5-2 or final amount in Item 7-1)

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WATRY DESIGN, INC.
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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
PRELIMINARY STORMWATER QUALITY CONTROL PLAN/NOTES/DETAILS

Scale
NOT TO SCALE

C8.17

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

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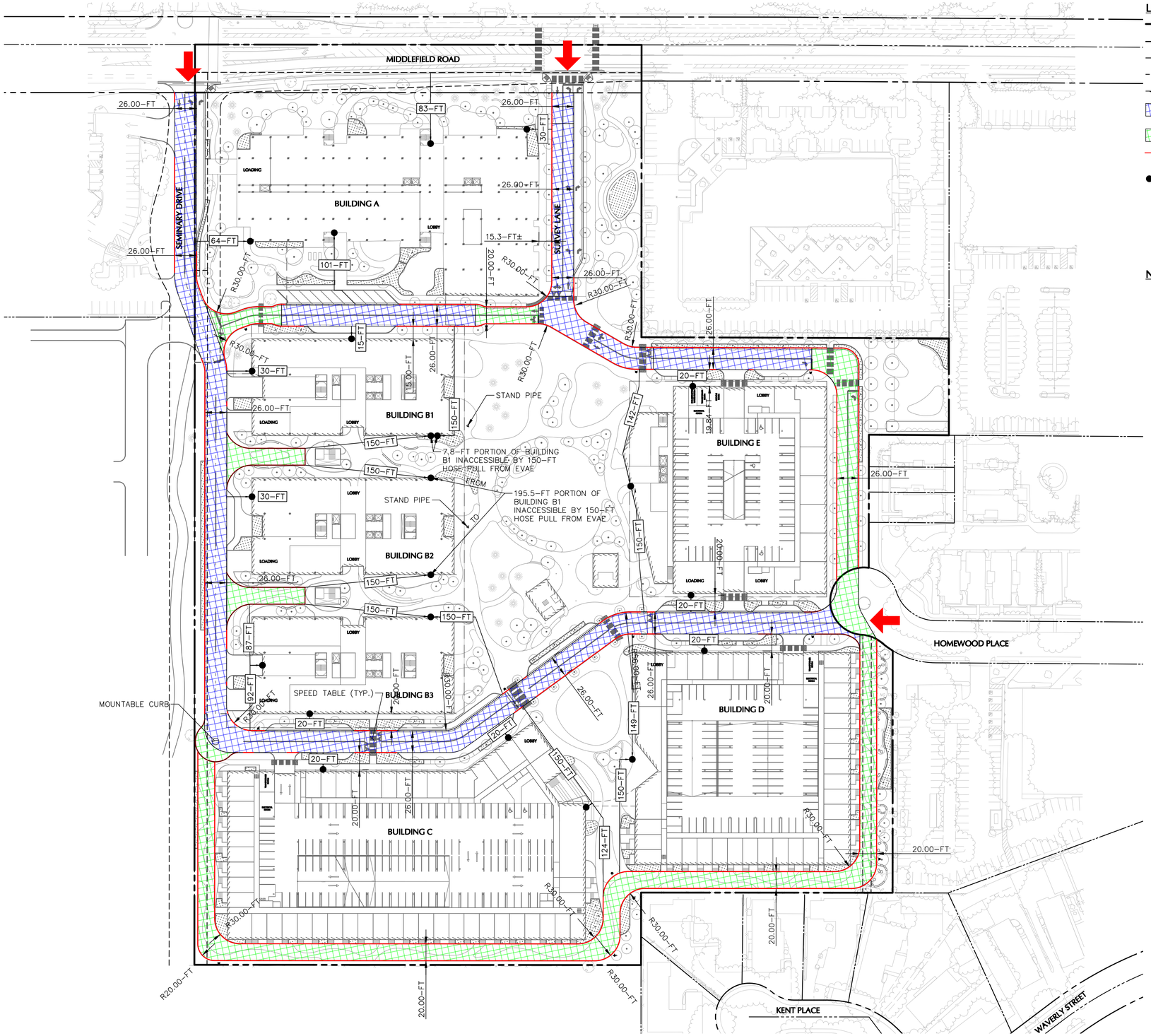

LEGEND

- PROPERTY LINE
- RIGHT OF WAY
- STREET CENTERLINE
- EASEMENT
- BUILDING
- AERIAL ACCESS ROAD (26-FT MIN)
- FIRE ACCESS ROAD (20-FT MIN)
- RED PAINTED CURB , NO PARKING FIRE LANE
- HOSE REACH TO EXTERIOR OF BUILDING MEASURED FROM FIRE ACCESS ROAD TO EXTERIOR OF BUILDING (MAXIMUM OF 150-FT)
- FIRE HYDRANT
- ACCESS POINT

NOTES

1. PORTIONS OF BUILDING B1 AND BUILDING B2 ARE NOT WITHIN THE 150-FT MAXIMUM HOSE PULL LENGTH MEASURES FROM FIRE ACCESS ROAD TO EXTERIOR OF BUILDING. A STAND PIPE WILL BE PROVIDED ALONG THE EAST SIDE OF THESE BUILDINGS IN LIEU. LOCATIONS SHOWN ON THIS SHEET AND ON C7.0 – PRELIMINARY UTILITY PLAN.

60 0 20 40 60
SCALE: 1 INCH = 60 FEET

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
EMERGENCY VEHICLE ACCESS PLAN

Scale
1-INCH = 60-FT

C9.0

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Date: 1/29/2026 Time: 20:20 User: dshitanishi Style Table: Langan.stb Layout: C9.0 Document Code: 770730001-0301-CA601-0101

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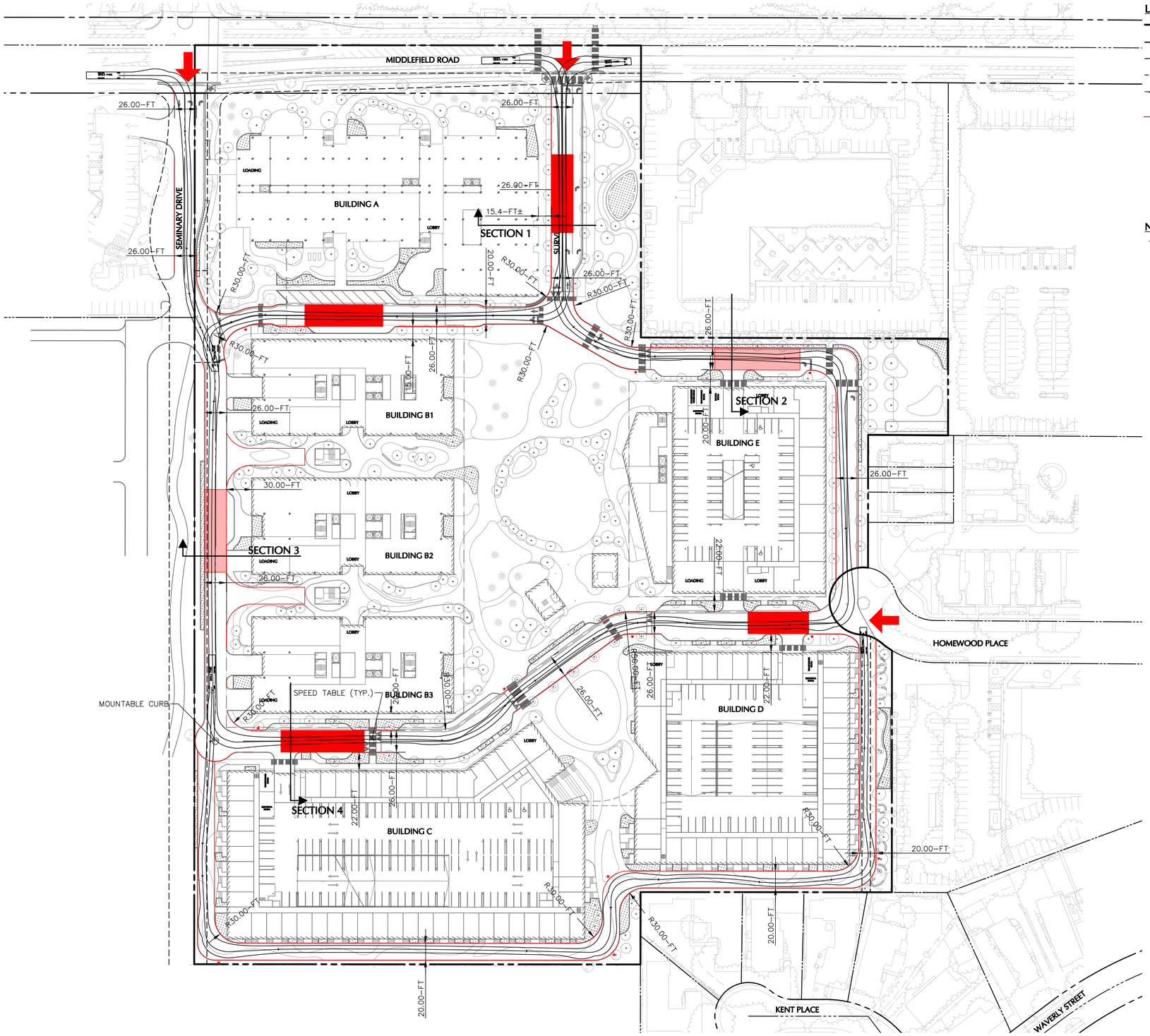
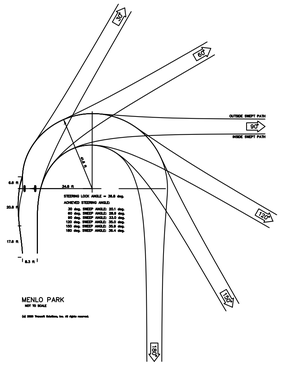


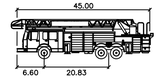
LEGEND

- PROPERTY LINE
- RIGHT OF WAY
- STREET CENTERLINE
- EASEMENT
- BUILDING
- RED PAINTED CURB , NO PARKING FIRE LANE
- STAGING AREA
- FIRE HYDRANT
- ACCESS POINT

NOTES

1. SEE SHEET C10.1 FOR EMERGENCY VEHICLE SECTIONS





MENLO PARK

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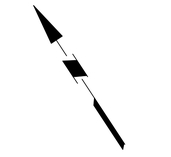
Width	: 8.25
Track	: 6.82
Lock to Lock Time	: 6.0
Steering Angle	: 36.8



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△	Date	Description
	01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
FIRE TRUCK AERIAL ACCESS PLAN

Scale
I-INCH = - 60-FT

C10.00

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

Date: 1/29/2026 Time: 20:21 User: dshitanishi Style Table: Langan.stb Layout: C10.0 Document Code: 770730001-0301-CA601-0102

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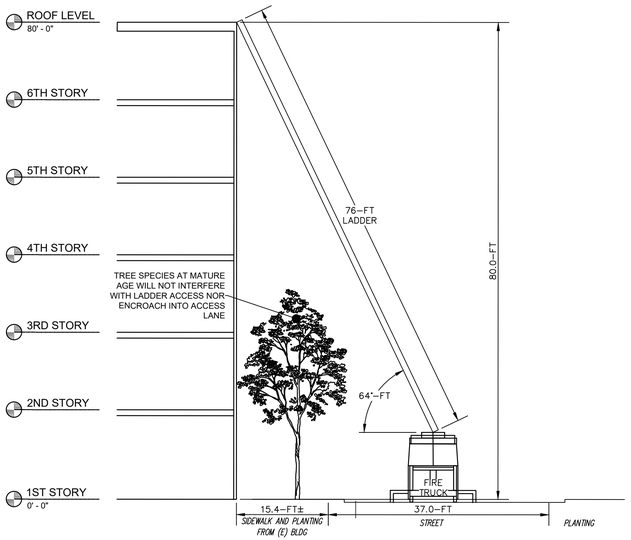
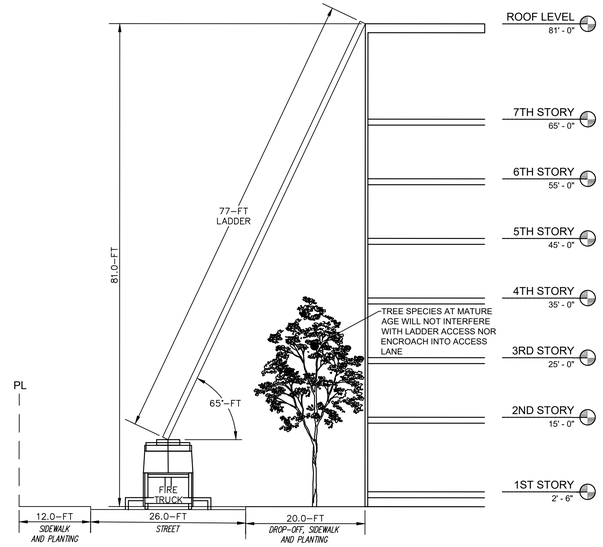


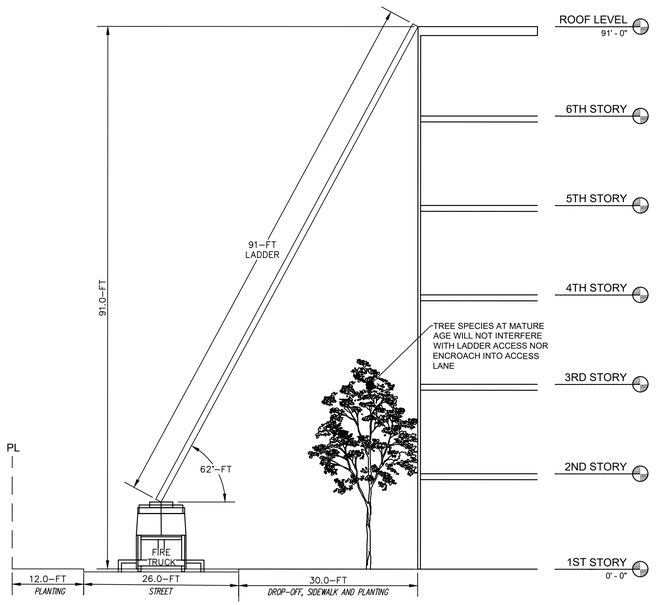
BUILDING A
26' AERIAL ACCESS CLEARANCE
@ 37' DRIVE AISLE
NOT TO SCALE

1



BUILDING E
26' AERIAL ACCESS CLEARANCE
@ 26' DRIVE AISLE
NOT TO SCALE

2

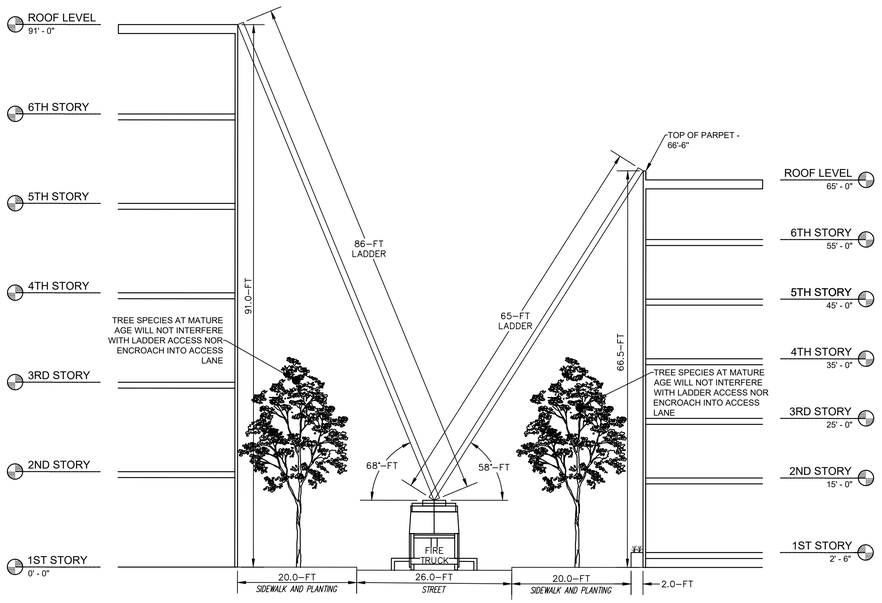


BUILDING B2
26' AERIAL ACCESS CLEARANCE
@ 26' DRIVE AISLE
NOT TO SCALE

3

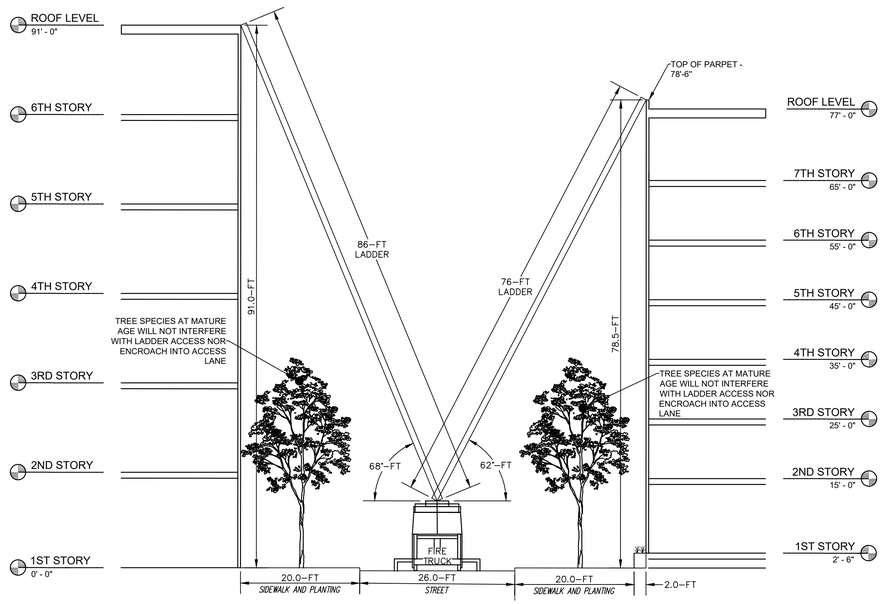
FIRE TRUCK / EMERGENCY VEHICLE STAGING GENERAL NOTES

1. FIRE APPARATUS ACCESS ROUTES, STAGING AREAS, AND LADDER SETUP ZONES ILLUSTRATED ON THESE DRAWINGS ARE DIAGRAMMATIC AND FOR PLANNING/ENTITLEMENT PURPOSES ONLY. FINAL DIMENSIONS, TURNING RADII, AND CLEARANCES WILL BE CONFIRMED AND APPROVED BY THE MENLO PARK FIRE PROTECTION DISTRICT (MPFPD) AND THE CITY AS PART OF SUBSEQUENT PERMIT SUBMITTALS.
2. LOCATIONS FOR FIRE TRUCK STAGING, LADDER PLACEMENT, AND AERIAL ACCESS TO ROOF EDGES ARE BASED ON CURRENT BEST PRACTICES FOR FIRE APPARATUS OPERATIONS AND MAY BE ADJUSTED DURING FINAL DESIGN TO REFLECT MPFPD EQUIPMENT SPECIFICATIONS, UPDATED CODES, AND SITE CONDITIONS AT THE TIME OF CONSTRUCTION.
3. THE ROOF LADDER ACCESS ZONES AND ILLUSTRATED REACH ENVELOPES ARE CONCEPTUAL AND ASSUME TYPICAL AERIAL APPARATUS REACH. FINAL ROOF EDGE DETAILING, PARAPET DESIGN, GUARDRAILS, AND ACCESS POINTS (E.G., STANDPIPE LOCATIONS, ROOF HATCHES, OR STAIRWAY EXITS) WILL BE COORDINATED WITH MPFPD DURING BUILDING PERMIT REVIEW TO ENSURE ACCEPTABLE LADDERING LOCATIONS AND FIREFIGHTER ACCESS.
4. ALL DRIVE AISLES, PLAZAS, AND SHARED USE AREAS IDENTIFIED FOR EMERGENCY VEHICLE STAGING MUST REMAIN UNOBSTRUCTED BY PERMANENT SITE FURNISHINGS, LANDSCAPING, OVERHEAD PROJECTIONS, OR OTHER ENCROACHMENTS



BUILDING B3 + BUILDING C (WEST)
26' AERIAL ACCESS CLEARANCE
@ 26' DRIVE AISLE
NOT TO SCALE

4



BUILDING B3 + BUILDING C (EAST)
26' AERIAL ACCESS CLEARANCE
@ 26' DRIVE AISLE
NOT TO SCALE

5

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
EMERGENCY VEHICLE SECTIONS

Scale
NOT TO SCALE

C10.1

1/27/2026 2:24:00 PM Autodesk Docs://001.4474.000 - 345 Middlefield/SITE-001.4474.000-345-Middlefield_R25.rvt

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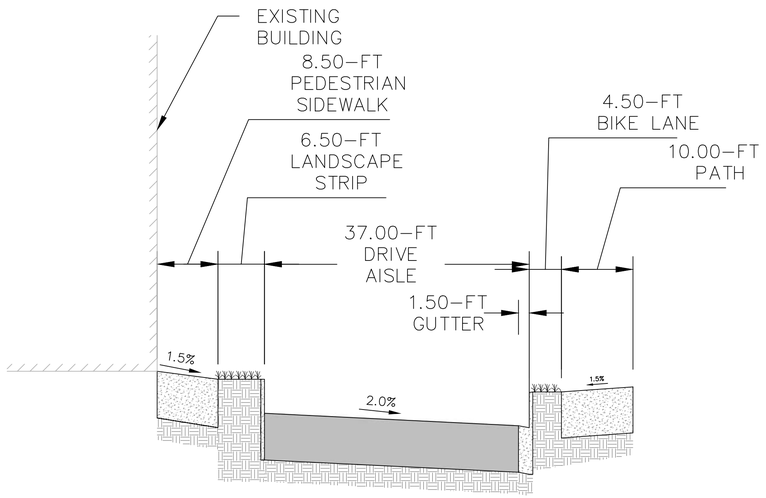
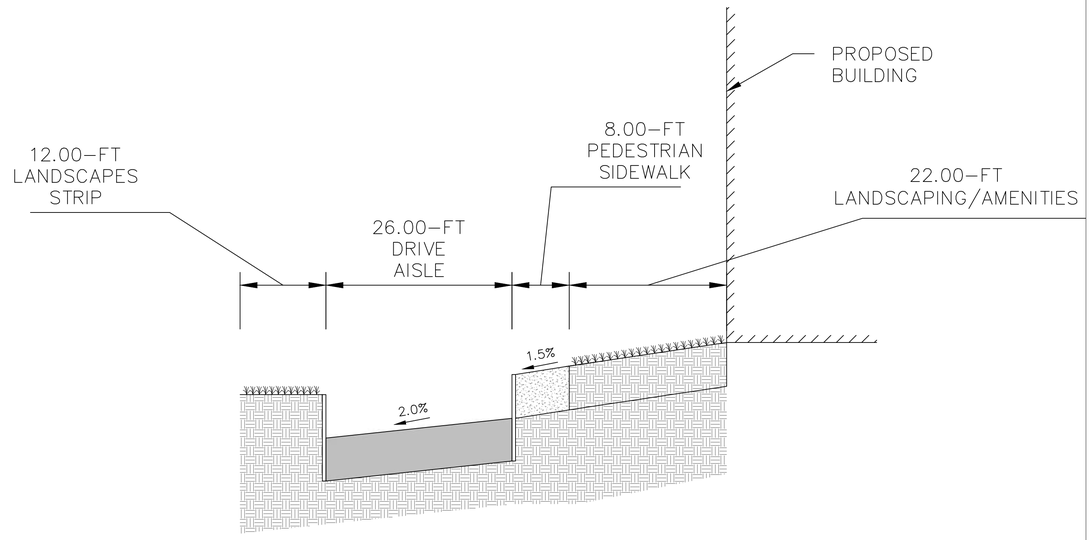


SECTION AA'
NO SCALE



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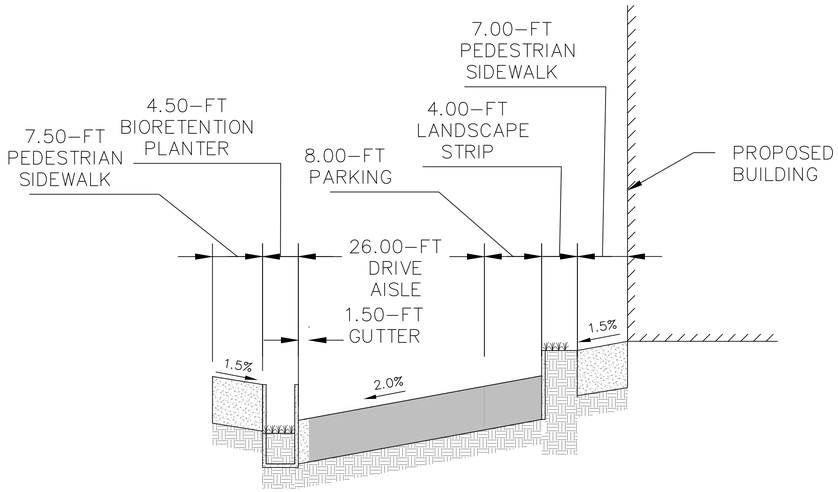
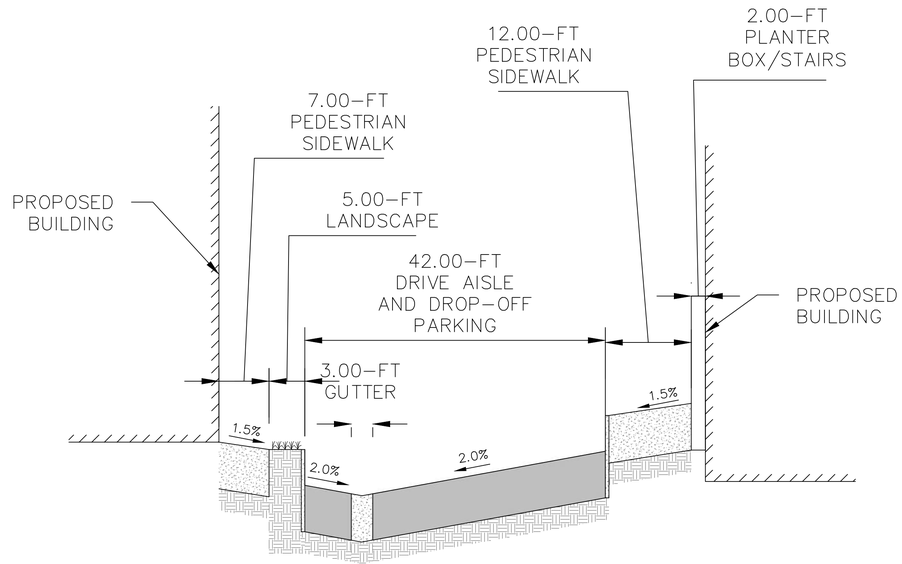
NO SCALE



SECTION BB'
NO SCALE



SECTION DD'
NO SCALE

PRESIDIO BAY

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△ Date	Description
01.30.2026	PLANNING APPLICATION

Project Name
345 MIDDLEFIELD RD

Project Number
770730001

Description
TYPICAL STREET SECTIONS

Scale
NOT TO SCALE

C11.00

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